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VOLUME 7, NUMBER 7

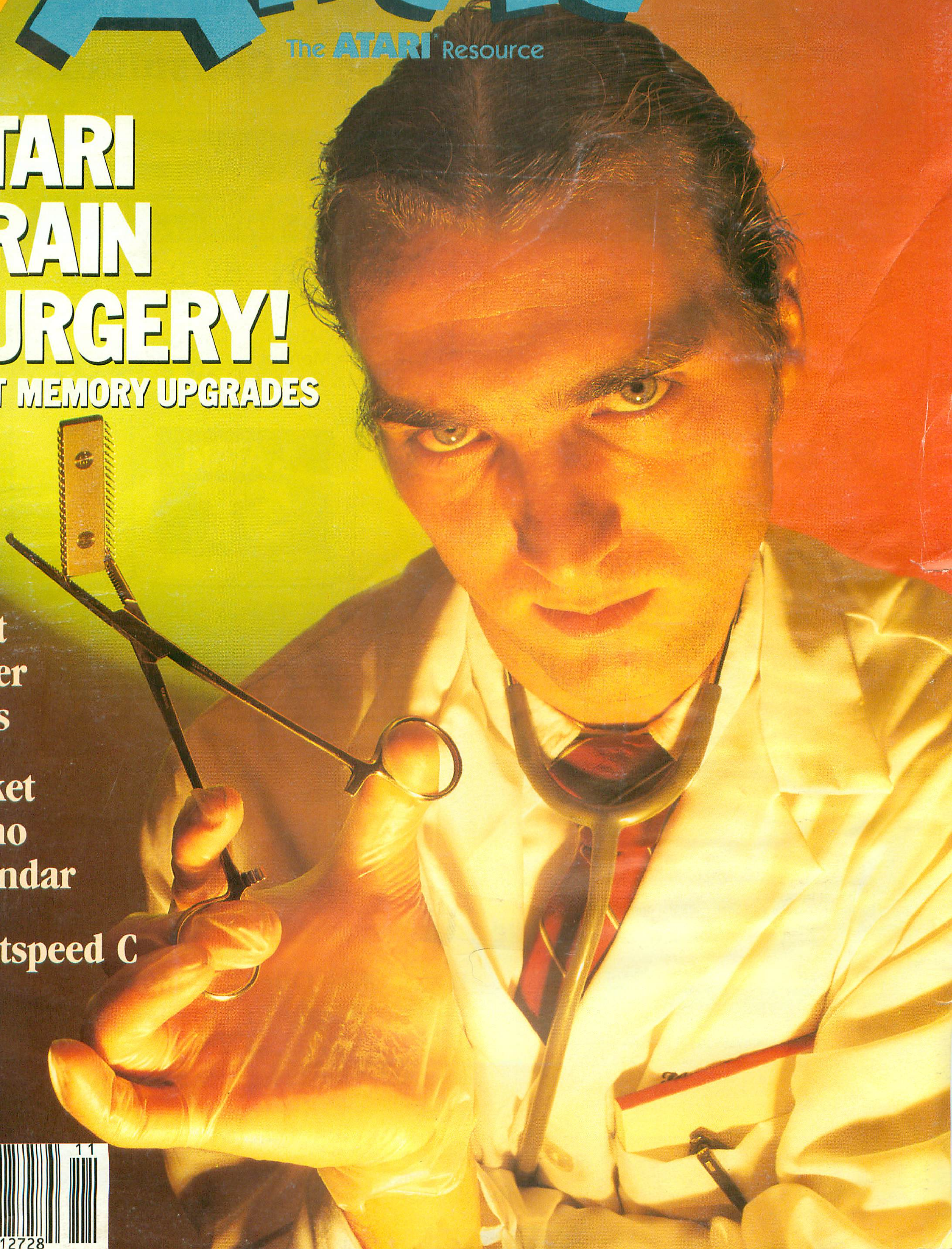
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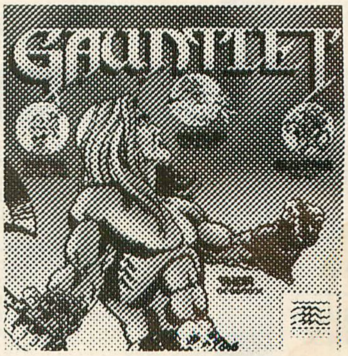
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# Antic®

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*Mystery at the Birthday Party. Page 28*



*Flower Garden. Page 40*

## FEATURES

**NOVEMBER 1988, VOL. 7, NO. 7**



## DEPARTMENTS



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## ST RESOURCE

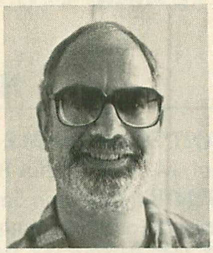


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## EDITORIAL

# Antic Readers Speak



The July 1988 **Antic** Editorial Survey revealed some significant shifts among our readers' concerns—even though the overall picture of a "typical" **Antic** reader remains much the same as was first seen in the September 1985 survey. (Results of that previous survey were published in the January 1986 **Antic**.)

The main difference between the 1988 and 1985 surveys seems to be that now the pendulum swung back towards the majority of readers being primarily interested in **Antic's** own ready-to-use programs—both type-ins *and* disk bonuses. Back in 1985, the most important parts of the magazine for a majority of readers appeared to be reviews and new product information.

Here are some of the numbers that led to this conclusion—50.3% of readers counted in the survey said they wanted more type-in programs and 52.9% wanted more disk-only bonus programs. But only 28.1% called for more non-program articles. Looking at the most popular specific categories, a solid 52% wanted more new product information while 48.5% wanted more product reviews. But an even higher 68.1%, wanted more type-in practical user programs (55.8% called for more disk-only practical programs) while 67% wanted more type-in utility programs (55% voted for more disk-only utilities).

In general, readers want more—or at least the same amount—of just about everything they find in **Antic**. The two glaring exceptions are ST coverage (52.6% want less) and Atari-unrelated coverage (52% want less). And as we promised in last month's editorial about the early survey trends, the magazine has already taken a number of steps to give you more pages of Atari 8-bit programs and news—plus a monthly double-sided disk packed exclusively with 8-bit material.

Just as in 1985, the 1988 prototype **Antic** reader is an intermediate (66.1%) BASIC programmer (93.9%) who owns an Atari XL/XE computer (58.5%) with a disk drive (87.4%), printer (84.2%) and modem (57%). An ST plus an 8-bit Atari is owned by 10.8%, and additional computer brands—primarily PC compatibles—are also owned by 10.8%.

There now seem to be a number of splits emerging between various elements of the **Antic** readership. Most markedly, there is a highly vocal division between readers who want either less or more game programs. In the type-in action/arcade game category, 32.2% wanted less and 37.1% wanted the same amount as now—wanting more was in third place with 26.9%.

Special thanks go to two Atari users groups, MACE of Michigan and APES of Louisiana, who sent in mass responses from their members. The 1988 survey compilation program was written by Technical/Online Editor Charles Jackson (who also wrote the 1985 compiler). Editorial Coordinator Carolyn Cushman compiled the results.

**Antic** would like to thank the 343 readers who responded to the 1988 editorial survey, a turnout that was hardly any less than the 1985 participation.

*Nat Friedland*

Nat Friedland
Editor, Antic

# Survey '88 Results

## Tramiel Write-In Overview

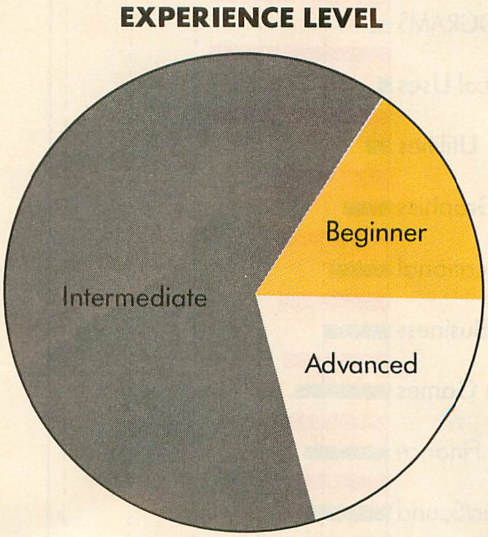
In the May 1988 Sixth Anniversary issue of **Antic**, we asked readers to send letters to Atari's chairman of the board, Jack Tramiel.

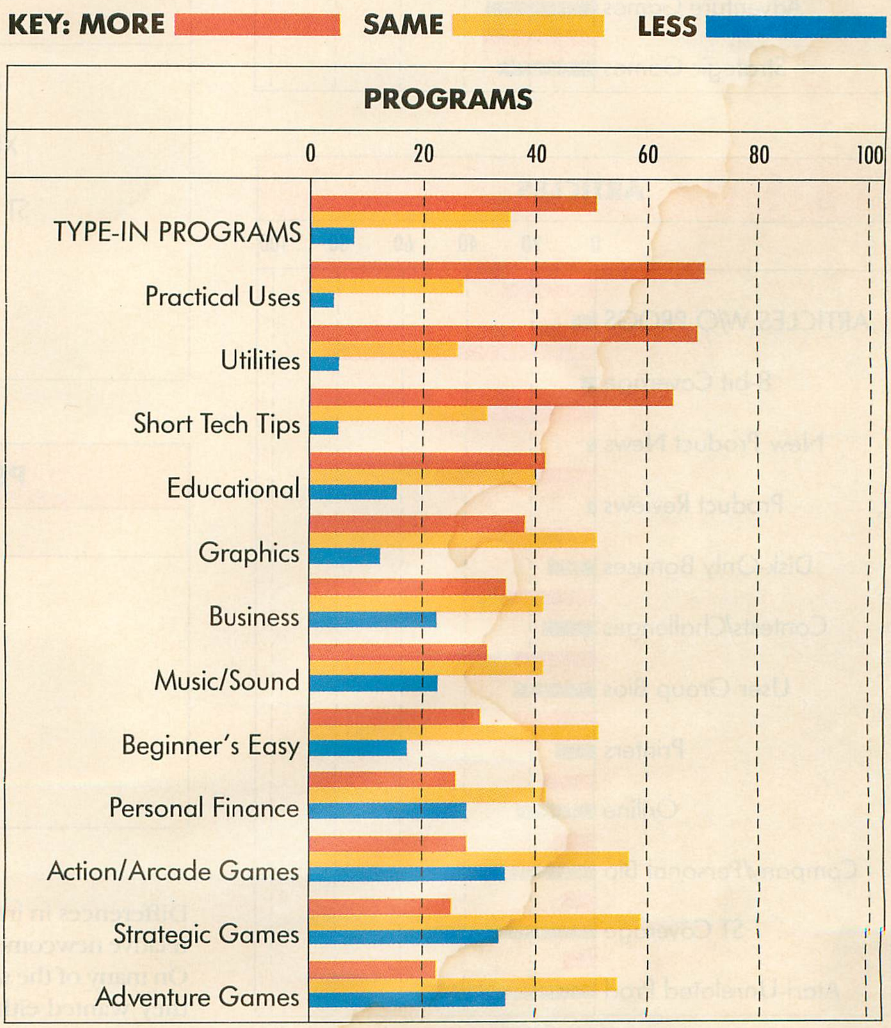
In the following weeks we received 54 photocopies of consumer letters and 43 copies of replies from Atari. About 65% of the reader letters provided store addresses and phone numbers. Atari generally replied to these letters that a nationwide dealer network was being established.

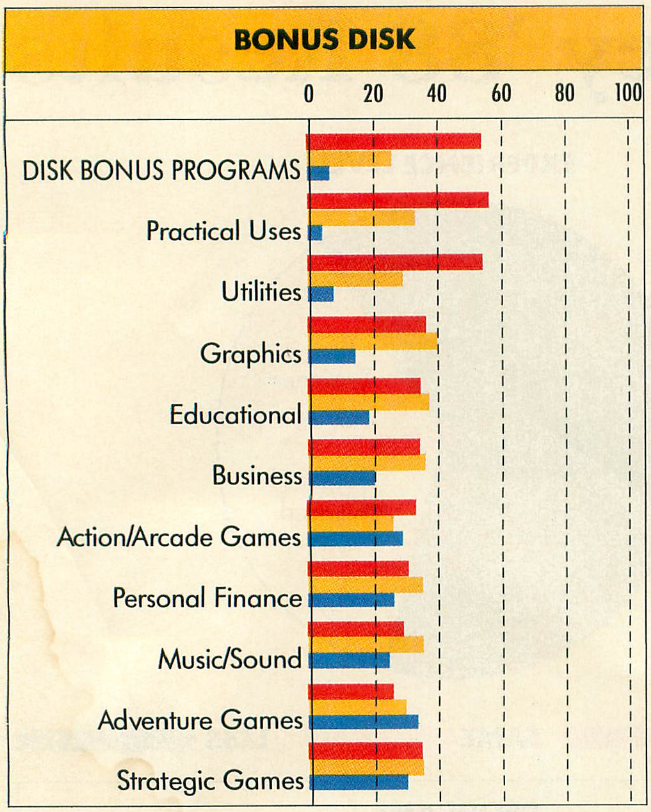
The other most frequent topic, appearing in 46% of the consumer letters, was a list of the Atari equipment owned by the writers. About 40% of the responses from Atari included a list of available 8-bit merchandise; 35% said that the suggestions or information provided by the consumer were being forwarded appropriately; and 33% simply thanked the consumers for their suggestions.

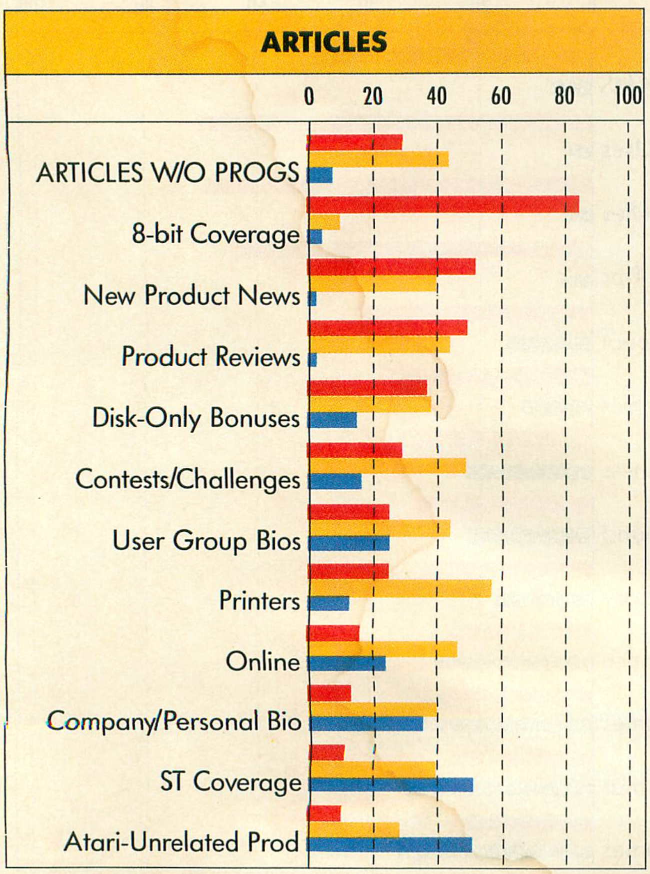
Comments in the reader letters ranged widely—from "You don't care" and "Deliver what you promise" to praises of "Great job."

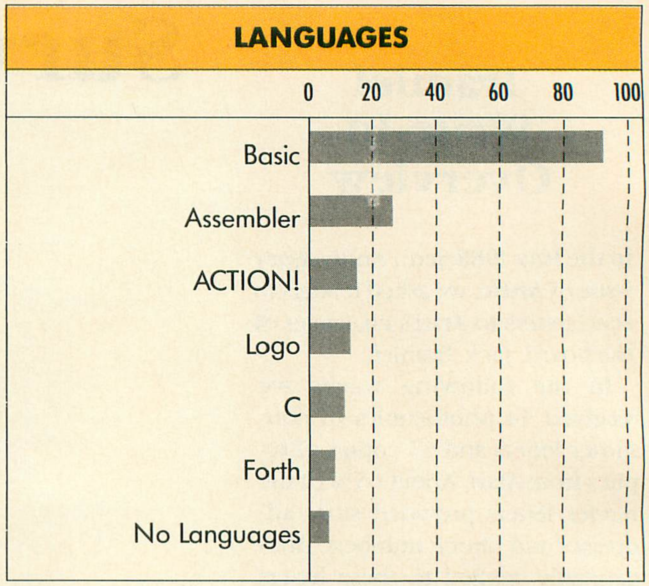
Unfortunately, the **Antic** readers who took the trouble to write letters could have been more specific in telling Tramiel what they really want. Few of the writers actually discussed what would influence them to buy more Atari products, or even specified something that they wanted to buy. From this, **Antic** has learned that next time we try a campaign like this, we must try to make it clearer to readers that better results might be obtained by telling Atari *how* you use your equipment to help you, as well as just listing what you own.—GREGG PEARLMAN

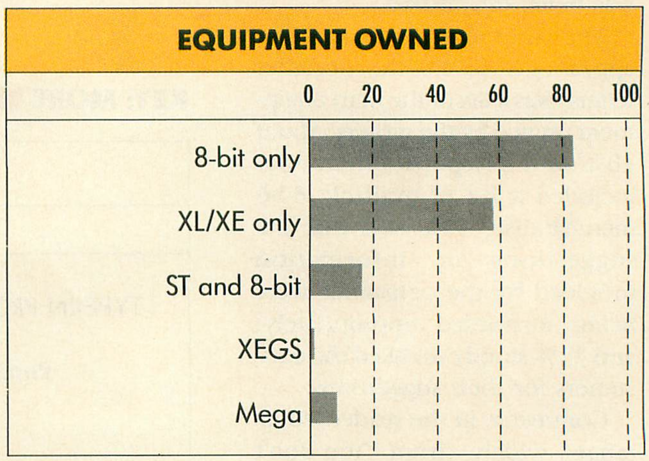


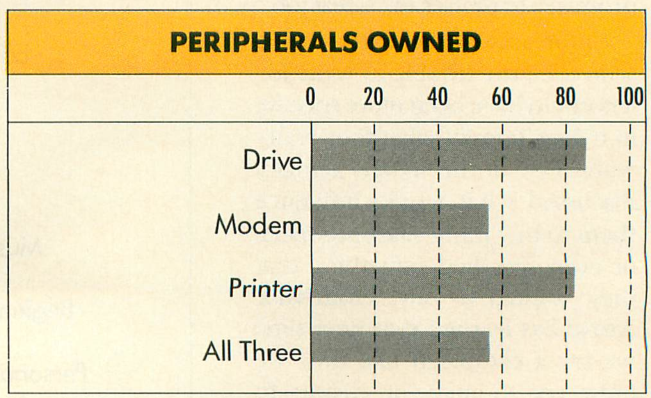






Differences in interests between longtime Atari users and relative newcomers were shown in the write-in comments. On many of the *same* topics, different readers wrote in that they wanted either more coverage or less coverage. ▲

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## CODEMAKER FIX

There is a minor problem with *Text Screen Codemaker* (**Antic**, July 1988). As the program stands, it adds an increment to the line number (LN), even if there's a blank line. For example, if you set the line number to begin at 100 with an increment of 10, but you start your text on line 5, the the first line number of your source code will be 140.

To correct this problem, remove the LN=LN+IN from line 20255 and add it to line 20275, so the new lines read:

```
20255 FOR Y=0 TO 22:C=Y*CC+1
20275 LN=LN+IN:GRAPHICS 0:POSITION LM,4:? LN;
```

Gary Golaszewski
Nanticoke, PA

## COLDSTART

In your June 1987 *Tech Tips* you published a USR call—USR(52487)—which ostensibly causes a coldstart reboot. I assume this works only on an XL or XE, because it makes my trusty 800 crash, leading me to believe that the published call is illegal.

Clay Halliwell
West Plains, MO

*Thanks for letting us know. It turns out that the statement* X=USR(52487) *was a misprint! The correct statement is* X=USR(58487) *which refers to COLDSV, the coldstart entry point.*—ANTIC ED

## SEGA CREDIT

Matthew Ratcliff would like to credit Paul Wilson of the St. Louis Atari Computer Enthusiasts for the Sega Light Gun modification discussed in his *First Look Inside the XE Game System* (**Antic**, August 1988). The correction to the modification is needed. The Sega gun's trigger contains a normally-closed switch. The XEGS requires replacement with a normally-open switch which should be easily found at Radio Shack stores. To exchange the switches, follow the instructions in the article.—ANTIC ED

## GUAM'S NOT FOREIGN!

I live in Guam. Recently I ordered software from a mail order company, that advertises in **Antic**. But instead of software, the company sent back my order along with the message that "international and APO orders must be prepaid with U.S. money order."

Guam *isn't* international! It's a United States Territory, specifically included in the United States domestic postal coverage. The civilian residents of Guam are not foreigners. My address is neither an APO or FPO address. It's a normal, domestic United States Post Office box number in a place where U.S. law applies. At least I've never had any trouble when ordering from The Catalog.

For trivia buffs, I want to mention that there are at least three other sovereign nations now included in the United States domestic postal system, as well as two Commonwealths and three Territories. Nations: Republic of the Marshall Islands, Federated States of Micronesia and Republic of Palau. Commonwealths: Puerto Rico and the Northern Mariana Islands. Territories: United States Virgin Islands, American Samoa and Guam.

Richard Davis
Agana, Guam

## NEWSROOM COMPATIBLE?

I have an old Atari 800 that has been upgraded to 288K. Can I use Springboard Software's Newsroom on my machine, or, if not, can the program be modified?

Ben Brockman
Las Vegas, NV

*Sorry, it's not a matter of memory SIZE that prevents Newsroom from working on the Atari 800—it's because of different memory LOCATIONS used in the XL/XE models, and we don't know of any modifications. But by the way, Springboard says they are still working to overcome the incompatibility problems with the Atari 850 interface reported by some users.*—ANTIC ED

## BAD SIGNAL

If you happen to want to simulate bad television reception, type in the following short program:

```
10 CHBAS=756:SDMCTL=559:CRSINH=752
20 X=PEEK(CHBAS):Y=PEEK(SDMCTL):? CHR$(125):POKE SDMCTL,0:POKE CRSINH,1
30 POKE CHBAS,212
40 FOR I=2 TO 37:FOR J=2 TO 21:POSITION I,J:? "A":NEXT J:NEXT I
60 POKE CHBAS,212:REM START IT!
70 POKE SDMCTL,Y:FOR I=1 TO 5000:NEXT I:? CHR$(125):POKE CHBAS,X:POKE CRSINH,0
```

Douglas Blackwell
Scarborough, Ontario
Canada

## ATARI MAGAZINE

In your editorial in the July, 1988 issue of **Antic**, you state that "At this writing, **Antic** is the only magazine covering all Atari computer models every month." In West Germany we have the German-language Atari Magazin for all Atari computers. It was first published in January 1987 as a bi-monthly, but since March 1988 it has been published monthly.

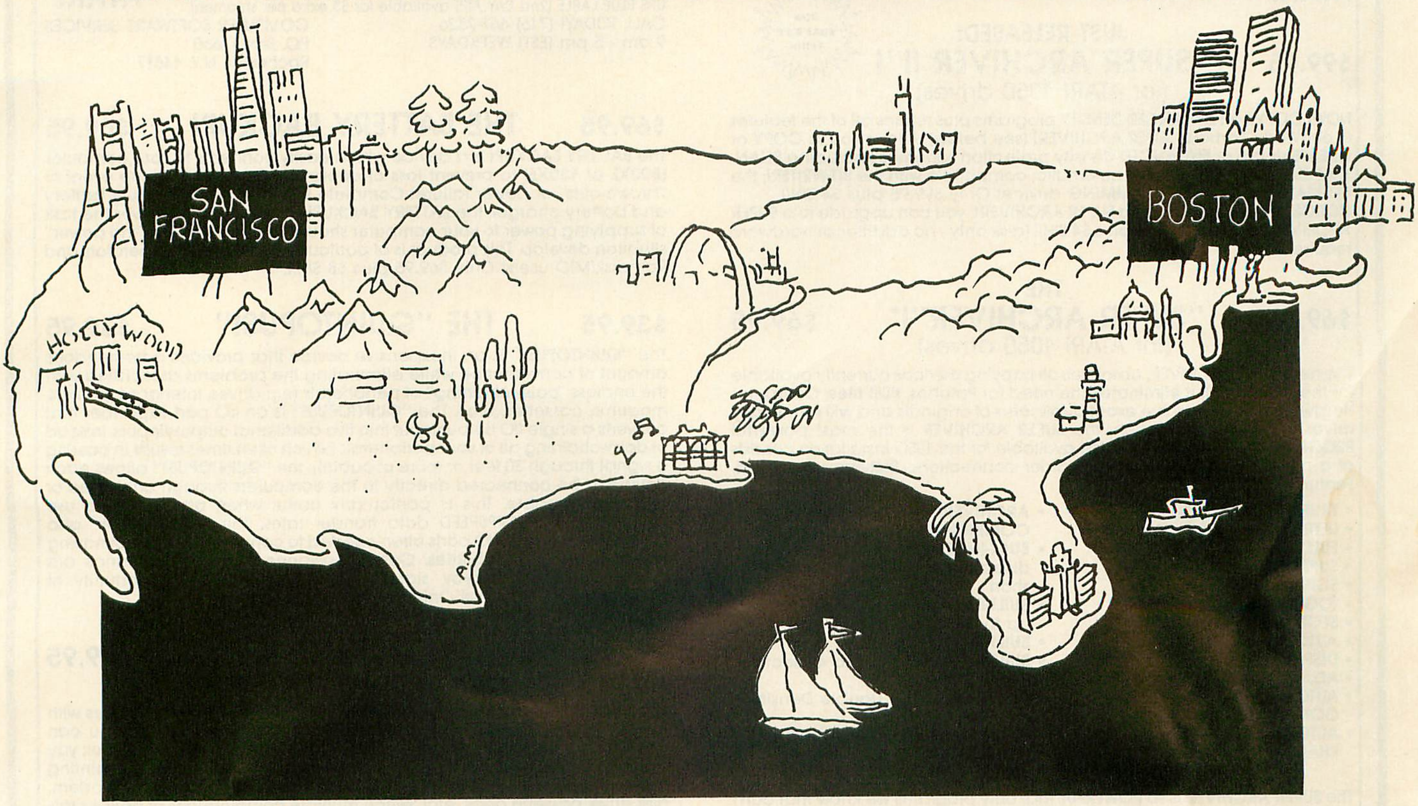
Hans Christian Boas
Hannover-Muenden
West Germany

*It was just about "At this writing" that Atari Magazin went monthly. Thanks for updating us.*—ANTIC ED

***Antic** welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

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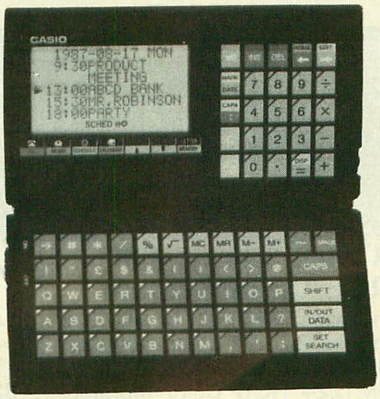
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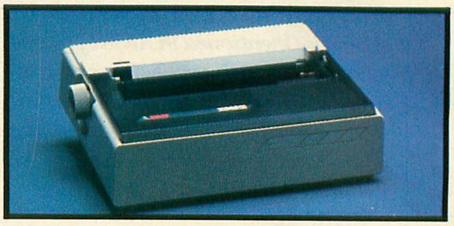
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## ST SOFTWARE

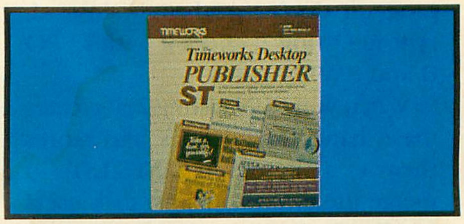



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## ST SOFTWARE

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B611

# Dimension Wizards

Two-player challenge from Trinidad. **By Bernard Cozier**




**Dimension Wizards is a challenging fast-action game for two players. Dodge the lightning bolts of your opponent while you desperately strive to teleport back home soldiers who were banished from an Earth war by displeased ancient gods. This BASIC program works on 8-bit Atari computers with at least 48K memory. A disk drive and two joysticks are also required.**

The gods have adjourned after casting the warring colonies of black and white soldiers into a state of suspended animation and scattering them across 20 different dimensions. You and your opponent—wizards both—must press your joystick buttons to begin teleporting soldiers from your own colony back into a more familiar dimension.

Type in Listing 1, DIMWIZ.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you have trouble typing the special characters in lines that appear throughout the program, don't type them in. Instead, type in Listing 2, check it with TYPO II and SAVE a copy.

When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST. To merge the two programs, disk users LOAD "D:.BAS" and then ENTER "D:LINES.LST." Be sure to SAVE the completed program before you RUN it.

Wizard 1 is the white cursor, Wizard 2 is the black. Two joysticks are required. After both buttons have been pressed, a sound will indicate teleportation to another dimension.

The site of a previous battle will appear onscreen, with one to four dead warriors from each colony and four to nine "frozen" soldiers.

Vital statistics for Wizard 1 are displayed at the top of the screen. The same information categories are displayed at the bottom of the screen for Wizard 2. These include the score, remaining strength of the wizard, the number of lives each must save and the current "charge" of your lightning bolt which you'll fire against your opponent, hoping to nail him for 50 points.

Each wizard must try to touch his

soldiers, whether they're dead or just frozen, thus returning them to their own dimension. Touching a dead warrior gives you 15 points and touching a live one gives you 30.

### TRICKS FOR WIZARDS

After all the soldiers of one color have been returned to their home dimension, their wizard teleports to the battlefield in the next of the 20 dimensions. The other wizard must follow soon if he doesn't want to lose more men to the enemy.

Reaching your men isn't easy. Standing in your way are members of the opposing colony, frozen in place. You've got to move them out of the way, but the tremendous power of your touch will kill them. The problem here is that this decreases the number of lives your opponent must save. But at least you get 15 points—the war still goes on back in your home dimension, and every enemy you kill helps toward your goal of winning.

Your opponent might not appreciate your wanton slaughter of his men, so he may get back at you by firing lightning bolts. A hit gives your opponent 50 points and decreases strength on both sides. However, even though your wizard can float above the obstacles, your lightning bolts can't pass through—so your opponent can hide behind the obstacles.

> **Teleport soldiers back into a more familiar dimension.**

### BOLTS OF DEATH

By touching a Pedestal of Power or a Shrine of Strength, you can increase (by twos) your lightning bolt charge to 9 and your strength to 99. This can help you prolong the game. Or you can bring a quick end to the game by firing extra-strength lightning bolts.

But after each bolt is fired, your charge drops back to 1, so try not to accumulate and waste Pedestals of Power unless you're deliberately preventing your opponent from using them.

When you reduce your opponent's strength to zero, the game is over. The number of teleportations is tallied up, and whoever teleported the most is the winner. So even if you kill your opponent, you could *still* lose.

---

*Bernard Cozier is the first* **Antic** *author from Trinidad, West Indies.*

*Listing on page 67*

TYPE IN SOFTWARE

# Personal Pocket Calendar

Wallet-size appointment monthly. **By Jim Hodny**

**Personal Pocket Calendar creates handy appointment calendars and datebooks that are just the right mini-size to carry around conveniently.**

Personal Pocket Calendar creates a pocket-size 4.5×5 inch monthly calendar and diary that will remind you of two appointments for each day of the month. Your reminder notes can be viewed, changed or deleted whenever you wish. Entire monthly calendars and notes can be stored on disk, reloaded, viewed onscreen, or printed on just about any Epson-compatible printer.

After you print a mini-calendar, it can be cut out and carried in a wallet or purse. On the calendar grid, you'll see each appointment or memo marked with an asterisk (*) on the date square. The complete memos or appointment notes are compactly printed alongside the calendar. *(If you enjoy the convenience of Personal Pocket Calendar, you'll probably also like* Appointment Calendar, *a January 1986* ***Antic*** *program that prints full-page monthly calendars showing your appointment notes inside the day squares.*—ANTIC ED)

Type in Listing 1, APNTCAL.BAS, check it with TYPO II and SAVE a copy before you RUN it.

## GETTING STARTED

If you have a printer other than an Epson or compatible, you may need to change lines 860, 880, 890, 910, 920, and 960 (which turns double-wide printing on, then off) to your own printer's codes for these functions. The program contains REMarks explaining which printer function must be changed on each of the above lines. Your printer manual should show the function codes you need.

The main menu has eight selections. Normally you'd get started by pressing the [1] key to select "Create A New Calendar." At the question "Create calendar for what month?" you type a number between 1 and 12, representing your choice from January (1) to December (12). If the number of the month you select has one digit, you must press the [RETURN] key—but this is not necessary if it's a two-digit number.

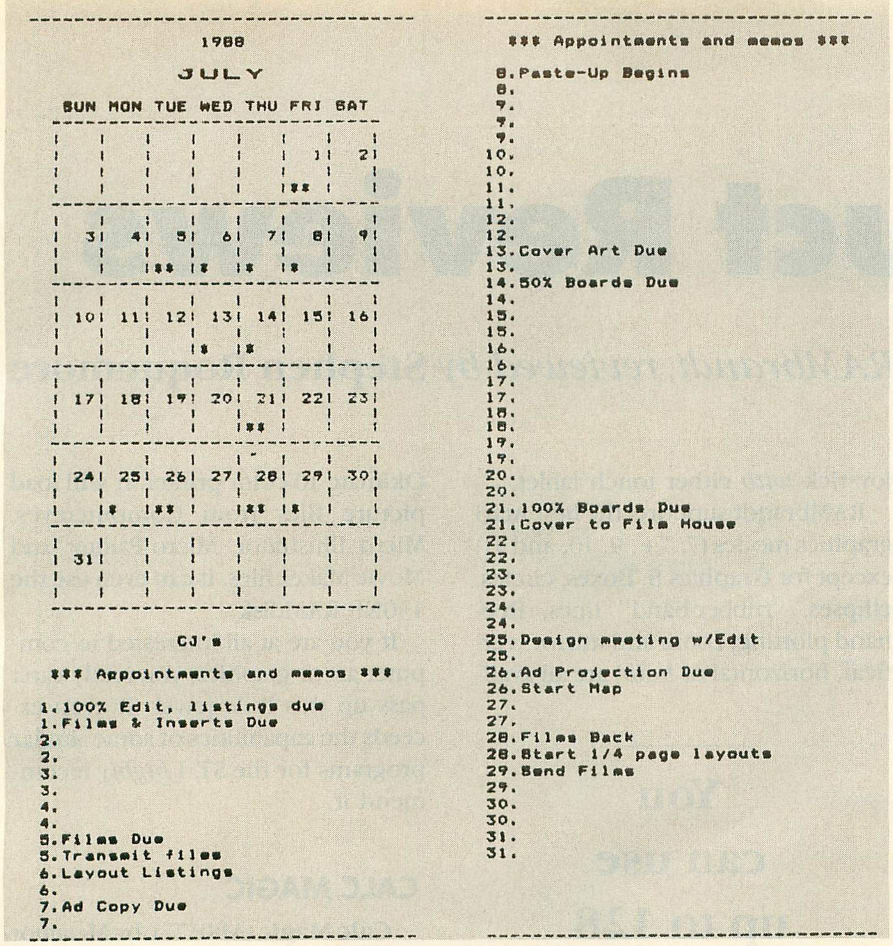
At the Year prompt, enter a four-digit year, such as 1988. The message "Creating calendar—please wait" will appear. When the main menu reappears, press [6] to display the chosen month. Then press any key to continue.

Press [4] to save the present calendar to disk and you'll see the words "Saving calendar." When the main menu reappears, press [7] to see that the calendar has been saved to disk and also how many more calendars can be saved to that disk. Then press any key to continue.

## MEMO MAKER

To create or edit memos, press [3]. At the question "Appointment for which date?" type any number up to the number of days in that month. At the "Enter appointment/memo" prompt, type any amount of characters up to the limit that fits in the boxed area. Then press [RETURN] and you'll be back at the date prompt. If you type the same date as before, you'll see your current appointment/memo displayed. Type in a second note and press [RETURN].

The date question will appear again, so type the same date. Now you will see both previous appointments/memos. You can only enter two appointments. So if you now type a third one, you will be prompted to select which of the earlier notes to replace. Or you can press [ESC] to go to the main menu. Press [CONTROL] [CLEAR] to delete



```
---------------------------------------
                 1988

                 JULY

 SUN MON TUE WED THU FRI SAT
-----------------------------
|   |   |   |   |   |   |   |
|   |   |   |   |   |  1|  2|
|   |   |   |   |   |   |   |
|   |   |   |   |   |** |   |
-----------------------------
|   |   |   |   |   |   |   |
|  3|  4|  5|  6|  7|  8|  9|
|   |   |   |   |   |   |   |
|   |   |** |*  |*  |*  |   |
-----------------------------
|   |   |   |   |   |   |   |
| 10| 11| 12| 13| 14| 15| 16|
|   |   |   |   |   |   |   |
|   |   |   |*  |*  |   |   |
-----------------------------
|   |   |   |   |   |   |   |
| 17| 18| 19| 20| 21| 22| 23|
|   |   |   |   |   |   |   |
|   |   |   |   |** |   |   |
-----------------------------
|   |   |   |   |   |   |   |
| 24| 25| 26| 27| 28| 29| 30|
|   |   |   |   |   |   |   |
|   |*  |** |   |** |*  |   |
-----------------------------
|   |   |   |   |   |   |   |
| 31|   |   |   |   |   |   |
|   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |
-----------------------------

                 CJ's

 *** Appointments and memos ***

1.100% Edit, listings due
1.Films & Inserts Due
2.
2.
3.
3.
4.
4.
5.Films Due
5.Transmit files
6.Layout Listings
6.
7.Ad Copy Due
7.
---------------------------------------
```

```
---------------------------------------
 *** Appointments and memos ***

 8.Paste-Up Begins
 8.
 9.
 9.
 9.
10.
10.
11.
11.
12.
12.
13.Cover Art Due
13.
14.50% Boards Due
14.
15.
15.
16.
16.
17.
17.
18.
18.
19.
19.
20.
20.
21.100% Boards Due
21.Cover to Film House
22.
22.
23.
23.
24.
24.
25.Design meeting w/Edit
25.
26.Ad Projection Due
26.Start Map
27.
27.
28.Films Back
28.Start 1/4 page layouts
29.Send Films
29.
30.
30.
31.
31.
---------------------------------------
```

*Exact-size sample printout of an* ***Antic*** *production calendar, as made with Personal Pocket Calendar.*

the contents of the current box and try it again. You will be prompted to press [RETURN] when you are done.

Press [6]. Your calendar will be displayed with two asterisks in the date that you chose previously. Press any key to continue.

With your printer turned on, press [5]. The calendar will now be printed with the appointments and memos you listed.

Press [8] to exit the program. You'll be asked if you want to save your current calendar. Since you made some changes to the previously saved calendar, press [Y]. This prompt will also appear when you choose to create or load another calendar with main menu selections [2] and [3]. ▲

*Jim Hodny is an elementary school principal from Newfolden, Minnesota. He has owned Atari computers since 1982 and is making his first appearance in* Antic.

*Listing on page 70*

# Product Reviews

*Calc Magic, Spell Magic, RAMbrandt, reviewed by* **Stephen Roquemore**

## SPELL MAGIC

**Spell Magic** (AP0144) is a spelling checker that was originally designed by Blue Collar Software to work with their Word Magic (AP0130) word processor. However, it will work just fine with files created in AtariWriter Plus, PaperClip, or the word processor in HomePack. Spell Magic has a 34,000-word dictionary and you can add any number of personal dictionaries that each contain up to 10,000 words. With online help screens and simple menus, you can begin using Spell Magic right away.

Spell Magic displays your file in the upper half of the screen while it's doing its thing, so you can check spelling "in context." It will update your personal dictionary automatically while checking. It works with one or two drives and provides word count statistics when done.

I highly recommend Spell Magic to those with the original AtariWriter (which didn't have a spell checker) and HomePak. Owners of early versions of PaperClip who didn't upgrade to the new version with its own spelling checker could also benefit from this little dandy.

## RAMBRANDT

**RAMbrandt** (AP0157), by Bard Ermentrout of the Pittsburgh users group, is a paint program that has been popular for some time. It is subtitled "The Atari Design Studio," and well it should be—with so many features that I can't even list them all. You can use a joystick, KoalaPad or Atari Touch Tablet to create your own works of art. You can even use the joystick *with* either touch tablet.

RAMbrandt supports the best Atari graphics modes (7, 7+, 9, 10, and 11) except for Graphics 8. Boxes, circles, ellipses, "rubber-band" lines, freehand plotting, zoom and mirror (vertical, horizontal or *both*) are all available, as are fills in solid, pattern, random, and user-defined patterns. You can define your own brushes, plot text with user-defined fonts, define Quilts and Tiles—and paint or fill with any of these.

**You can use up to 128 colors in *any* mode and animate up to 32 frames at any speed.**

You can use as many as 128 colors in *any* mode, generate colors in several different ways, animate your pictures up to 32 frames at any speed. In Window Mode, you can rotate, flip, wipe, animate, scale, cut-and-paste, or rubber-stamp all or any part of your picture.

The program provides printer support for Epson, Star/Gemini, NEC, C. Itoh and compatible printers, plus the Okimate 10 color printer. It will load picture files from Computereyes, Micro Illustrator, Micro-Painter and Movie Maker files. It can even use the 130XE RAMdisk.

If you are at all interested in computer art or graphics, you really can't pass up this little jewel. It even exceeds the capabilities of some similar programs for the ST. I *highly* recommend it.

## CALC MAGIC

**Calc Magic** (AP0177), by Metamorphosis Development, is well-known as a nice little spreadsheet program for 8-bit Atari computers. It requires an Atari XL or XE computer and 64K of memory. It offers the usual capabilities of any spreadsheet, but is quite easy to learn and use. It uses multiple menus like SynCalc, but has a built-in English set of commands that make it a bit easier to work with.

Calc Magic scrolls very quickly and seems to be programmed for quick response to user requests like recalculations. With the built-in "programming language," you can quickly build templates to reduce the amount of typing required. Commands can be selected from pop-up menus. Spreadsheet files can be saved in DIF format for transfer to other spreadsheet or database programs which support DIF files. This program offers a *lot* of power for a *small* price. I highly recommend it to anyone who doesn't need a full-power business-level spreadsheet.

$19.95 each. The Catalog, 544 Second Street, San Francisco, CA 94107. (415) 957-0886.

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# Dr. Brilliant's INCREDIBLE ATARI BRAIN TRANSPLANTS

## All about 8-bit memory upgrades.

**By Lee Brilliant, M.D.**

Why *not* an Atari 800 with 256K to 1Mb of useful internal memory? Why not a 512K XL? Or why not put your XE into six-figure RAM with a full megabyte of add-on memory?

Many experienced Atari users seem endlessly fascinated with the potential of beefing up the memory capacity of their trusty 8-bit computers — especially if they are like me and have invested hundreds (if not thousands) of dollars and hours into Atari 8-bit equipment and software.

When **Antic** asked me to try writing the definitive article about 8-bit Atari memory upgrades, I evaluated commercial packages and public domain schematics for every Atari model made. I covered every upgrade product I could find. As a key part of my research, I personally made hardware upgrades on two Atari XLs and three 800 models.



*Photo by Georgia Solkov, Model: Dwight Been*



## AVAILABLE UPGRADES

Upgrades are now available for every Atari computer ever made. But if you own a 400 or a 600XL you should unload it on your kids or your mother-in-law. The 400 and 600XL are harder to upgrade and less flexible because of their small size and lack of a video monitor port.

If you own an Atari 800, there are at least eight public domain upgrades and the commercial Magna Systems RAMcharger you can install. For the 800XL and 1200XL there are three professional upgrades—*from* Magna Systems, ICD's RAMbo XL and the Newell 256KXL.

For XEs, the only commercial upgrades I know of come from Magna Systems, but there are several in the public domain. New from Innovative Concepts is the RAMdrive + XE-GM1 (reviewed in **Antic**, August 1988), which converts the XE Game System into a 128K computer that is 100% compatible with the 130XE.

Sources for commercial upgrades and a tested public domain upgrade are provided at the end of this article. Prices for the commercial products are often subject to some changes because of continuous fluctuations in the prices of memory chips.

The author and **Antic** Magazine are not responsibile for any damages which might result when readers carry out electronic construction projects described in this article. Any original factory warranty remaining on your Atari is voided when you open the computer case.

## MEMORY BACKGROUND

Before starting to discuss the specific memory upgrades available, we need to introduce some information about the way that the 8-bit Atari handles memory chips.

The most commonly used type of memory chip is Dynamic Random Access Memory (DRAM). DRAM stores information as single bits in micro-miniature capacitors. Think of these chips as paper cups with holes in them—over time, the chip will lose its memory unless you keep refilling the capacitors. This process is called *refreshing* and is an important factor in upgrade design and implementation.



### UPGRADE SOURCES

RAMBO XL
ICD
1220 Rock Street
Rockford, IL 61101
(815) 968-2228.
$39.95 without RAM chips

256KXL
Newell Industries
602 East Highway 78
Wylie, TX 75098
(214) 442-6612
$39.95 without RAM chips

MAGNA SYSTEMS
147-05 Sanford Avenue,
Suite 4E, Flushing, NY 11355
(718) 939-0908
$225 approx.—256K for 800, plug-in board includes chips
$195 approx.—256K for XL, including chips and installation(Phone for other RAM prices)

PUBLIC DOMAIN 800 UPGRADE
800 Plus 256K (Rev. D, Ver. 1.6)
David Byrd
Ad Astra, January/February 1987
(For version with corrected PC board layout, send stamped self-addressed return envelope to: Lee Brilliant, C/O Antic Editor, 544 Second Street, San Francisco, CA 94107)

Your computer arranges memory bits in a grid of rows and columns which are "decoded" and brought out to address pins on the chips. Each standard RAM is arranged as a single row of bits like 64K X 1—or 256K X 1 in the quarter-megabyte RAM chips. Eight RAM chips together give a one-byte-wide line of memory—64K (or 256K) long. With a little manipulation of address decoding, you can rearrange the memory into any shape you want.

The original Atari arrangement is 64K of memory space in one block, with RAM in the first 48K and the operating system and hardware addresses in the top 16K. Newer Atari computers like the 800XL and 65XE start with a 64K block of RAM having the upper 16K available as RAM or the OS. When two banks of memory share the same address space, you can only select one at a time in a process called *bank selecting.* Any number of banks can occupy the same address space in RAM, but only one at a time. In the 130XE and all upgraded computers, the additional RAM is banked into the second 16K of the address space. (See *Figure 1.*)

## ATARI MAPS

Power does not come without a price, however. The Atari's 6502 CPU chip has only 16 address bits to control 64K of address space. To control the additional RAM banks, more address bits are needed. When only the 800 was available, Axlon came out with a 128K upgrade that used $CFFF (decimal 53247) as a hardware address to control the banks. Current 800 upgrades still continue this tradition.

In the older 8-bit models, the space $C000 to $CFFF was unused. But when the newer XLs put RAM there, the Axlon standard had to be dropped. It's a real shame, too, because with the Axlon standard you could access 16 *megabytes* of banked RAM!

When the 1200XL was released,

Atari stole joystick ports 3 and 4 (also called PORTB of PIA, the Peripheral Interface Adapter) and connected them internally to control the extra memory that was banked along with BASIC, the operating system, ROMS, hardware and various LEDs.

Atari removed these LEDs from their plans for the 800XL. This left five of the PORTB pins unused. So when the 130XE was released, Atari assigned four PORTB pins to control the additional memory. Bit 4 of PORTB selects the CPU to work in the extended RAM banks, while bit 5 does the same for the ANTIC chip.

When these bits equal 1, the respective integrated circuit is restricted to the main bank. Bits 2 and 3 select one of the four 16K banks, all of which have the same address of $4000 to $7FFF (decimal 16384 to 32767). A 256K computer needs two more bits to select all the banks, but we have only one free in PORTB. All XL upgrades take bit 5 of PORTB from ANTIC to use in bank selecting, so ANTIC can't use extended RAM independently of the CPU.

## 800 UPGRADES

The Magna Systems one-megabyte RAMcharger received an excellent review in the July 1987 **Antic**. The Magna Systems Axlon-compatible upgrades range from 256K to 1Mb and are super-easy to install on an Atari 800. The Magna RAMcharger is actually a self-contained plug-in board. All you do is take out the two screws holding the top lid covering the factory RAM cards (right behind the cartridge slots). Pull out the middle RAM card and pop in the RAMcharger, making sure it doesn't touch the neighboring cards. Now screw the lid back on and the installation is finished.

I found a few quirks in the RAMcharger's address decoding. The board not only responds to the addresses in Axlon range but also to some zero-page addresses, which might make some programs incompatible. Magna can compensate for this by either defeating the bank selecting with a switch or by installing a jumper wire to the ROM board in slot 1.

If you're an Atari 800 do-it-yourselfer, you can make your own 256K quarter-megabyte upgrade from public domain instructions. I personally did two of these and had no problems with the David Byrd upgrade listed with this article.

**I personally made hardware upgrades on two XLs and three 800's**

Some users who have built public domain upgrade projects report memory losses because of poor design in the refresh circuits. With the first upgrade I performed, I didn't notice any problems, but I was able to produce memory dropout under certain circumstances. The Byrd upgrade I list did not exhibit any dropout, but it could be that the RAM chips I used have long retention times. In any case, if you build a do-it-yourself upgrade, use the best chips you can find.

MYDOS will configure the 256K upgrades as a 2,000-sector RAMdisk and can recognize a full megabyte on the 800. These upgrades are fully Axlon-compatible and will give you an edge on any program that recognizes Axlon RAM. The problem is that few software products are doing so. For example, Springboard's Newsroom and BASIC XE from ICD/OSS only work on an XL/XE.

Nevertheless, adding Axlon RAM makes your 800 compatible with Print Shop Companion, and SynFile+ will boot with 288K of free RAM. By contrast, you only get 128K on XE and XL upgrades. For this reason alone, I doubt that I'll ever get rid of my upgraded 800.

## XL UPGRADES

The three commercial upgrades—from Magna Systems, ICD's RAMbo XL (reviewed in the July 1986 **Antic**) and the Newell 256KXL—deliver high quality at a low price. I also know of one 256K public domain XL upgrade project that was being sold direct by the author. *(At this writing, Antic could not verify a current address for the PD author. If the information later becomes available, we will print it in I/O.*—ANTIC ED)

Installing an upgrade for the Atari XL requires dismantling the computer, removing the RAM chips and one decoder chip, and making attachments to several other points on the circuit board. All the XL upgrades set up the RAM as a 64K main bank with 12 16K banks in the $4000 to $7FFF window.

It is harder to upgrade a computer in which the chips are not socketed—and many 800XLs have their chips soldered in. But while desoldering the original RAM chips makes installation more time-consuming, it's still not too difficult for a person who is reasonably dextrous and has a fair amount of experience in constructing electronics projects.

You can either do it yourself or get manufacturer installation of the ICD RAMbo XL or the Newell 256KXL. But Magna Systems insists on installing all the XL/XE upgrades it sells. The price includes installation and you must send your computer to them.

## 130XE UPGRADES

Magna Systems and the public domain both offer 320K, 576K and

1088K upgrades for the Atari 130XE. So far there are no commercial programs designed to utilize this extra RAM for anything except a RAMdisk. Unless you really need a RAMdisk larger than 1,600 sectors, I see little use for this much RAM.

The 130XE's additional RAM banks need more control bits than are free in *PORTB*. So you lose the self-test routine (no big deal) with 576K. You lose built-in BASIC with 1088K, but you can get around this by using a cartridge-based BASIC.

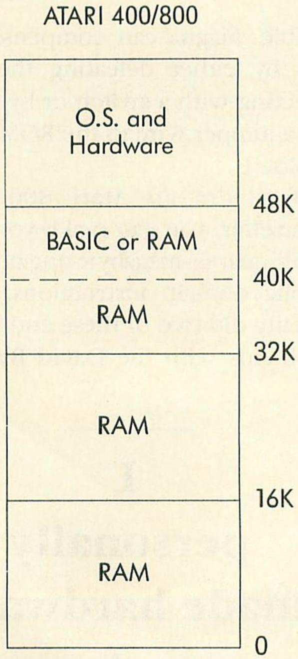
## COMPATIBILITY?

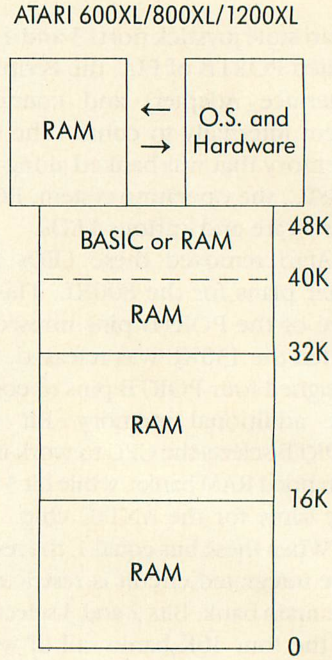
With so many different types of upgrades available, there are some concerns about compatibility. I tested David Byrd's public domain 800 upgrade, RAMbo XL and the Newell 256KXL for compatibility with PaperClip, SynFile+, Print Shop and Print Shop Companion, Typesetter, Newsroom, DOS 2.5 and MyDOS 3.2B.

No matter how much memory is crammed into an Atari 800, it could still not be expected to handle the 130XE-only versions of PaperClip or Typesetter—although it could run the older versions. (There is no 800-compatible version of Newsroom.) On the plus side, an 800 has 160K more RAM with SynFile+ than an XE compatible.

The XL upgrades will run all XE software, and both the RAMbo XL and the 256KXL ran every program I tested. However, RAMbo XL gives you 700 more text lines in PaperClip than Newell. While MyDOS works for all of the upgrades, it must be reconfigured for each one. MyDOS came configured for the Newell, but to reconfigure it for the other upgrades isn't easy because of the unclear manual.

There is one subtle difference between Newell and RAMbo involving the ANTIC chip. All upgrades use pin 5 of PORTB, so you cannot independently set ANTIC to the extended RAM or the main bank. This leaves only three options— place ANTIC




permanently in extended bank (undesirable), place it permanently in main bank (like Newell and Magna), or tie it to the CPU so that the CPU and ANTIC are always in the same bank (like ICD's RAMbo).

With the Newell/Magna method, if you try to page-flip the screen through RAM banks, you'll be disappointed. However, you can use the entire main bank RAM space for graphics and the extended banks without fear of "seeing" data on the screen.

RAMbo lets you place multiple screens in banked RAM and flip to them. While there are theoretical advantages to both systems, it actually makes little difference because you rarely place ANTIC into the bank access window. Usually the screen RAM is in the 16K bank above the access window.

I accidentally discovered that with RAMbo you can switch all banks into the window, including the 64K of main RAM. The first bank includes DOS and your programming, the third bank contains BASIC and the last 16K is under the operating system. This can be a real boon to a BASIC programmer. You get 24K of extra RAM space for graphics or data, besides the 12 banks used by the RAMdisk.

## INSTALLATION TIPS

Installation of the 800 public domain upgrade requires you to build a circuit board or "dead bug" installation of four ICs on one of the 16K memory boards, plus some modification to the ROM board. Magna Systems RAMcharger boards are simple to pop into the Atari 800, but you may need to add one extra jumper wire to the ROM board.

All of the 800's chips are plugged into sockets. So are most 1200XL chips and some of the 800XL chips—but not XE chips. Do-it-yourself upgrades usually aren't recommended if the factory chips are soldered to the board, but there are solutions. RAMbo XL is comparatively the easiest to install, requiring only one or two jumpers, one cable to the PIA chip, and removal of the RAM chips and one other IC.

The Newell upgrade calls for five wires to go to PIA and three jumpers elsewhere. Newell should have installed a ribbon cable like the RAMbo to make the five connections to the

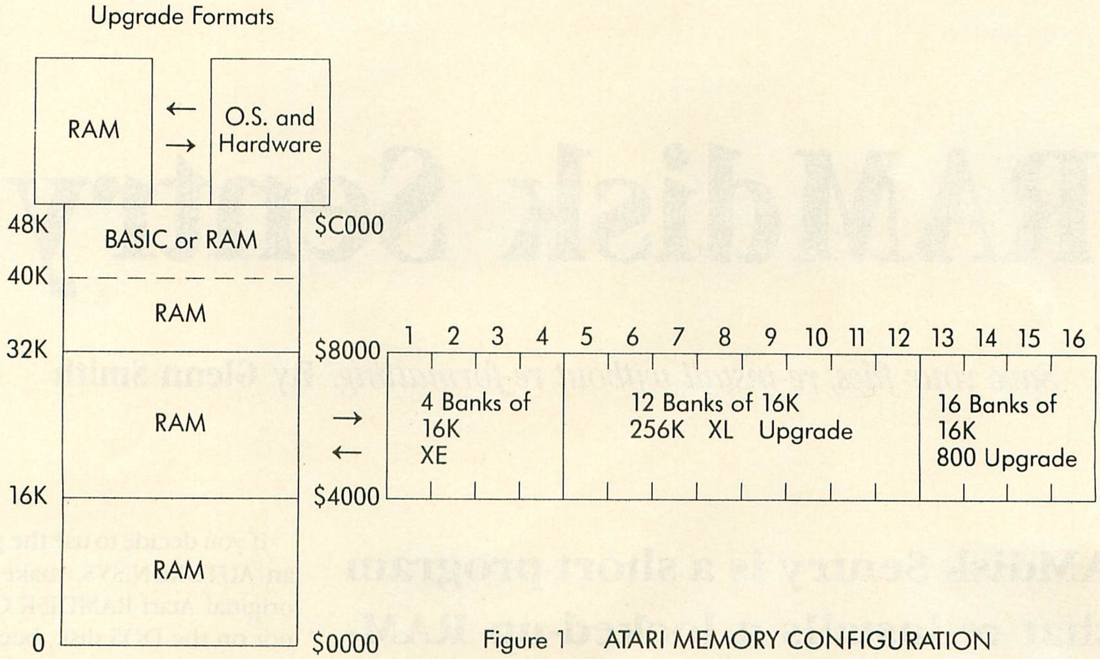


Figure 1 ATARI MEMORY CONFIGURATION

PIA. To make connections to the PIA, you can pry it out of the socket and bend up the pins. I attached a 5-pin piece of a 14-pin IC socket to the end of the ribbon cable to press onto the PIA instead of soldering. If it's soldered in place, you can simply solder right to the side of the pins without removing the IC. The older ANTIC can't refresh the 256K chips, so Newell requires you to replace it if it has an older part number (CO12296 instead of CO21697). The Magna and ICD products don't require this.

If you use a small wattage iron (about 25 watts) and keep soldering times below five seconds, you will not damage anything. If your chips are soldered, you can either desolder them all at once—or use my secret shortcuts!

The only chips you really *must* remove are eight RAMs and one 16-pin IC. The rest of the connections can be "tack-soldered" to the pins on ANTIC, to the circuit board, or to wherever else is necessary.

After chips are removed, they're useless, so you can just cut them out and toss them. Cut the pins close to the plastic body with a pair of fine cutters. Now you can remove each pin individually, which is easier than 16 pins at once.

Afterward, open the circuit board holes by heating the solder pads until the solder melts. Poke the hole open with a round toothpick or embroidery needle, remove the heat, then remove your probe. When all the holes are open, insert sockets and solder from the bottom *with fresh solder*. When all necessary chips are removed and sockets installed, installation can proceed normally.

New chips retain their memory longer, so when you turn off the computer you must wait as long as 20 seconds to reboot, or you may get strange results. If you are in BASIC, you can POKE 580,1 then press [RESET], or type BYE and press [RESET].

## CONCLUSIONS

The 800XL upgrades offer the widest software compatibility. If you need a *large* database, it might be better to upgrade an older 800 for use with SynFile+. One main reason for upgrading an Atari is so it can emulate the 130XE with software that uses the extra RAM. All upgrades mentioned here do that job, but the ICD gives you PaperClip files with 700 more lines. Expanding a 130XE gains you nothing with commercial software, but if you need a huge RAMdisk for a BBS, contact Magna Systems.

Don't try do-it-yourself memory installation if you have electrophobia. You might be able to get a member of your local users group or school electronics shop to do it for you, if you don't want to pay shipping and installation charges to have your upgrade manufacturer do the work.

The bottom line is this—bare upgrade boards cost about $40 and right now your cost for 256K worth of chips will be around $100. Add these prices and you come very close to the cost of a new Atari 130XE. Chip prices are widely expected to fall within a few months, but until then a memory upgrade only delivers a slight cost advantage over getting a new XE. But if you want a larger RAMdisk or larger database files than a standard 130XE supports, then an upgrade may be worth the extra time and money. A

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*Dr. Lee Brilliant is a physician in the San Fernando Valley area of Los Angeles and a well-known Atari 8-bit programmer/author.*

TYPE IN SOFTWARE

# RAMdisk Sentry

*Save your files, re-install without re-formatting.* **By Glenn Smith**

**RAMdisk Sentry is a short program that re-installs a locked-up RAMdisk without formatting it—thus retaining any files that were present in the RAMdisk before rebooting. This BASIC program works on 8-bit Atari computers with disk drive and enough memory to support a DOS 2.5 RAMdisk.**

Don't you just hate it when for some mysterious reason you can't access your RAMdisk files? And don't you just hate it *lots* when you save your only copy of a file to your RAMdisk press the [RESET] key and reboot your computer, thereby destroying everything on the RAMdisk? If any of this sounds familiar, read on.

Many of you have noticed by now that when you boot DOS 2.5 with the RAMDISK.COM file present, it always formats the RAMdisk—which may not be what you had in mind. RAMdisk Sentry works automatically when you load it from DOS. It re-installs a RAMdisk without formatting it. This means any RAMdisk files existing before the reboot will remain in the RAMdisk. The RAMdisk Sentry program also tells DOS whether or not the RAMdisk contains DUP.SYS.

NOTE: RAMdisk Sentry *won't* recover a RAMdisk if you turn off your computer. It works only if the computer remains powered up—and only if you are using Atari DOS 2.5.

## GETTING STARTED

Prevent lost RAMdisks. Type in Listing 1, NOFORMAT.BAS, check it with TYPO II and SAVE a copy before you RUN it. The BASIC listing will create a file called RAMDISK.OBJ, which can be loaded from the DOS menu using the L selection, or renamed AUTORUN.SYS. Listing 2, the MAC/65 source code, shows assembly language programmers how the RAMdisk is installed.

If you decide to use the program as an AUTORUN.SYS, make sure your original Atari RAMDISK.COM file is not on the DOS disk, because RAMDISK.COM will format the RAMdisk and erase all the files. If you rename the RAMdisk Sentry file to RAMDISK.COM, it will be executed just like the original, except that it won't format the RAMdisk—and any AUTORUN.SYS will also be executed.

These automatic loading methods work best if you plan to reboot your computer without turning it off. You can do this by returning to BASIC, typing a POKE 580,1 (setting the coldstart flag) and pressing [RESET]. Or you can do it from DOS by typing M (run at address) followed by E477 (the coldstart address). The computer will boot as usual, except that the RAMdisk will still contain all of your files.

I use the reboot method when switching between Turbo BASIC and Atari BASIC. This way, I never have to save my BASIC programs to a floppy disk until I know they work. It also saves time because I load Turbo BASIC from the RAMdisk each time I return from Atari BASIC. I also use it when I somehow manage to destroy DOS and have no choice but to reboot. ▲

*Glenn Smith of Grand Junction, Colorado is the author of* Class Scheduler *from the September 1988* ***Antic***.

*Listing on page 73*

# Antic *Disassembler*

*Super tool for assembler explorers.* **By David Kibler**

This month's Super Disk Bonus is a fast, powerful machine language disassembler written entirely in MAC/65 assembler code. Programmers will enjoy the ease with which Antic Disassembler turns binary files into source code listings that can be examined to teach you new techniques.

Antic Disassembler works on 8-bit Atari computers with at least 48K memory.

## PROGRAM GUIDE

When I first began programming in machine language, I searched for a disassembler that could do it all. I wanted a software tool that would disassemble binary files and show me the actual source code, so that I could discover those neat little programming tricks used in many public domain programs that were circulating at the time. I also wanted to get a hard copy of the disassembled listing.

But I mostly wanted a program that would do this fast. Well, I never found one, so I wrote Antic Disassembler.

## GETTING STARTED

Copy ANTICDIS.EXE from the Antic November 1988 Disk onto another disk which has been formatted with DOS 2 or DOS 2.5. (Make sure this disk has the DOS.SYS file on it). Finally, rename ANTICDIS.EXE to AUTORUN.SYS.

To start the program, turn off your Atari and place your Antic Disassembler disk in drive 1. Remove all cartridges (XL/XE owners should hold down the [OPTION] key) and turn on your Atari. Antic Disassembler will automatically load and run.

Antic Disassembler gives you three options—disassemble from memory, from a file, or from disk sectors. Simply type in the right number at the Choice> prompt and press [RETURN].

If you're disassembling from memory, the program will ask for the starting and ending memory addresses. This and all other numerical input in the program can be entered as either hexadecimal or decimal values. To enter hex, precede the input with a dollar sign ($).

If you want to disassemble from a file, the program will ask for the filename. You must enter the device as well as the filename, or you will get an error message. The file will be stored in memory before the actual disassembly, so the size of the file you can disassemble depends upon the amount of memory in your computer.

Finally, when you disassemble from disk sectors, you will be asked for the beginning sector number, the number of sectors you want disassembled, and the location in memory that you want these to be disassembled from. This last option is best used when you know where this code is placed after the computer loads it from the disk. If you don't give Antic Disassembler the correct address here, all direct jumps in the code will be incorrect and the disassembly will be useless.

If you type [P] directly after your choice at the main menu, the disassembly will be printed on your printer and displayed onscreen.

If you type [D], your disassembled listing will be written in a disk file. You need a lot of room on your disk if you choose this option because the output file will become very large quite fast.

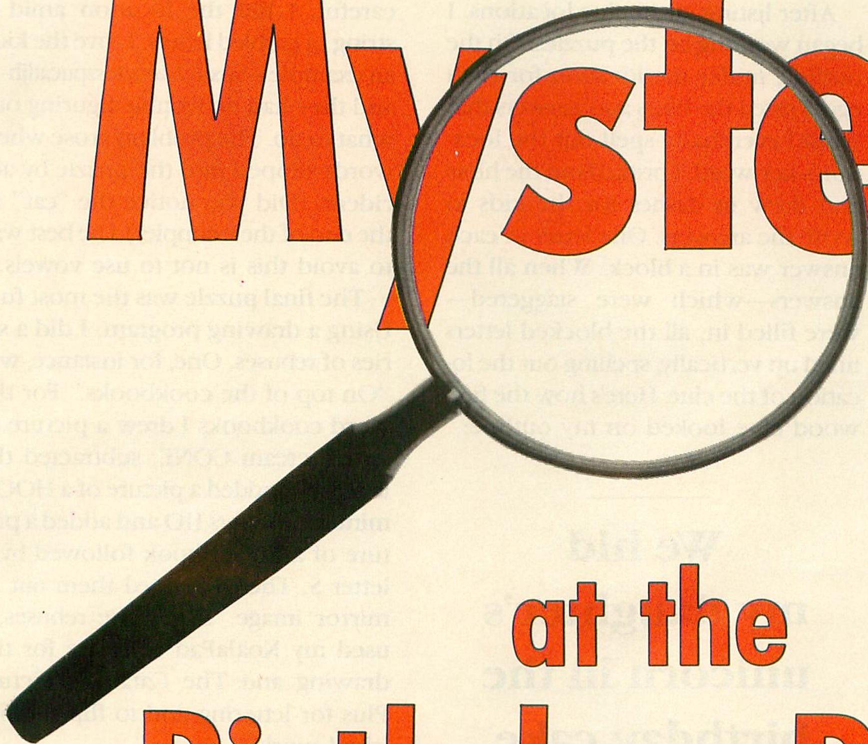
When the program is disassembling, you can use the [CONTROL] [1] toggle to pause the output. To stop the output, just press the [START] key. (Makes sense, doesn't it?)

Your November 1988 Antic Disk will be shipped to you within 24 hours after your order is received. This month's disk features Antic Disassembler plus every type-in program from this issue—and two special extra bonus programs, *Deluxe Adventure Creation Kit* and the Lightspeed C Fractals Demo. ▲



*Bettmann Archives*

# Mystery at the Birthday Party



### Family fun with your Atari — no programming required.

**By Neal Engledow**

Recently I was able to kill two birds with one Atari and I thought that **Antic** readers might like to know how I did it. My first problem, a general one shared by all home computer owners, was to justify the time and money the hobby absorbs like a black hole.

Most parents would recognize my specific second problem—My daughter, Asha, wanted to celebrate her ninth birthday by inviting a dozen friends over for a guaranteed good time. One solution would have been to let her guests play with my computer. They undoubtedly would have fought over games and access—and quite likely would have broken my trusty Atari into 64,000 bits.

However, I thought there must be a better way. So I turned to my wife, who never has problems finding things for me to do. She observed that our daughter had been reading children's mystery series books featuring detectives such as Nancy Drew and Encyclopedia Brown, and she suggested a Mystery Party.

Great, I said, thinking once again I had put myself in a position to prove that genius is 1 percent inspiration (hers) and 99 percent perspiration (mine). We decided to take something from Asha's room and hide it. Then we'd put together a series of clues that would lead the kids to that object.

First, I had to make the invitations. Inside each invitation we explained that the young detectives helping search for the missing treasure would be rewarded with cake and other goodies.

With Print Shop and Print Shop Companion I devised a Sherlock Holmes icon and a question mark border for the cover. This took three times as long as it should have, but I came up with a reasonable facsimile. Of course, I later found a better Sherlock on one of the Print Shop Library disks.

The next step was to figure out what to hide and where to hide it. We chose a small crystal unicorn Asha keeps on her bedside table. My wife cut a hole for it in the bottom layer of the birthday cake. Now we had to

figure out clues that would lead the kids *to* the cake. That was fairly easy—we hid small bags filled with cake ingredients such as flour, chocolate, sugar and an egg. We hoped the kids would find them, put two and two together and come up with chocolate cake.

The next step was a little harder. We didn't want the kids to scavenge for clues like they would for Easter eggs—we wanted to challenge them. So we designed some puzzles that directed them to the locations of the clues. When the kids arrived, we handed them the first puzzle. They figured it out and found the first clue—attached to which would be another puzzle directing them to the second clue, and so on.

Realizing that 12 detectives working on a single puzzle would be like 12 cooks stirring the soup, we divided the kids into four teams. Each team would have its own set of puzzles and clues. So we hid an egg for team A, an egg for team B, etc.

That meant that we needed 16 puzzles to provide each team with four sets of clues. I thought it would be impossible—especially for someone who can't solve Zork with a clue book. But with the help of an ordinary dime-store variety puzzle book, I came up with four types of puzzles. We used crosswords, scrambled words, a reverse alphabet code and rebuses (combinations of pictures and letters that form words). I created four crosswords, each directing one team to its egg, and four apiece of the other types for the other clues.

As all computer enthusiasts know, when you have gizmos interacting with do-dads it's time to break out the old CPU. I really needed an outliner, but since I don't have one, out came the PaperClip word processor. First, I listed the places where I would hide the clues:

1. The FIREWOOD pile
2. ASHA'S BED
3. The BARBECUE grill

. . .and so on

After listing all 16 clue locations, I began working on the puzzles. On the outline, under the location for each egg, I listed the hints and answers that would eventually spell out the location's key word. I printed out the hints and drew in dashes for the kids to write the answers. One letter in each answer was in a block. When all the answers—which were staggered—were filled in, all the blocked letters lined up vertically, spelling out the location of the clue. Here's how the firewood clue looked on my outline:

**We hid my daughter's unicorn in the birthday cake.**

1. FIREWOOD
A. Indians hunted it (bufFalo)
B. Underwater boat (submarIne)
C. Someone who shoots arrows (aRcher)
D. Birds that honk (geEse)
E. A bird that hunts (haWk)
F. State where oranges grow (FlOrida)
G. Game with clubs (gOlf)
H. Blow out on birthdays (canDles)

All the clues in this category had eight letters, so each team would need to put in the same amount of effort.

The second type of puzzle was easier to set up. I gave directions in a reverse alphabet code. (A=Z, B=Y, C=X, etc.) The clues had several words, such as "In the front seat of Mr. Engledow's car."

I found PaperClip's global substitution feature useful with this puzzle, changing words that were used more than once, such as "the" into "gsv."

The third puzzle was easy too, but like the crossword you have to be careful. I hid the location amid a string of garbled letters. I gave the kids an example—apxuy*liketzthisz*pucatljh—and they had no trouble figuring out what to do. The problem arose when words slipped into the puzzle by accident. (Did you notice the "cat" at the end of the example?) The best way to avoid this is not to use vowels.

The final puzzle was the most fun. Using a drawing program, I did a series of rebuses. One, for instance, was "On top of the cookbooks." For the word cookbooks I drew a picture of an ice cream CONE, subtracted the letters NE, added a picture of a HOOK minus the letters HO and added a picture of an open book followed by a letter S. Then I printed them out in mirror image. To do the rebuses, I used my KoalaPad software for the drawing and The Catalog's Picture Plus for lettering and to flip the finished work.

The birthday party, the real reason for the effort, was a roaring success. The only complaint was that the search wasn't long enough. The kids took about half an hour to figure everything out. If I do another mystery party, I'll add at least two more clue-and-puzzle combinations. The kids had a wonderful time, and despite admonitions that they were not competing, members of each team huddled quietly in isolation while figuring out the puzzles, squealed with glee when they found the solution, and raced to find each clue and puzzle.

As icing on the cake, so to speak, the cost of the entertainment aspect of the party was a little time and a few sheets of fanfold paper. In addition, when my son turns nine in two years, entertainment for his party is in the bag, or at least on the disk.

*Neal Engledow is a copy editor at USA Today. He has owned an 800XL for three years and calls himself "an inept programmer always looking for new ways to use the Atari."*

TYPE IN SOFTWARE

# Super Sieve

*Prime numbers found lightning-fast.* **By Denis DeVries**

**Super Sieve is a brief but lightning-fast Sieve of Eratosthenes prime number finder. It tests numbers to see if they are prime and also finds "nth" prime numbers. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.**

Prime numbers, those unbreakable integers that seem to pop up randomly, have interested mankind for thousands of years. The Greeks first studied them around 200 B.C. Since that time, primes have come to be important in communications and security coding. So they still have practical value as well as historic and aesthetic interest.

The ancient Greek mathematician Eratosthenes—who was also first to calculate the earth's correct circumference—proposed a mechanical sieve to filter prime numbers by sorting out all multiples of those numbers that were not themselves multiples of other numbers. Thus he kept 2 but threw out 4, 6, 8, etc. His sieve then kept 3 and rejected 6, 9, 12, etc.

This "Sieve of Eratosthenes" was an excellent idea but, as so often happens, the visionary inventor found it impossible to build the device with technology available during his lifetime. Today any computer can do the job and a "sieve test" has become the standard benchmark for rating comparative computer speeds. Your Atari 8-bit computer can find any of nearly a 1.5 million prime numbers in a few minutes, usually in just seconds.

## SEARCH FOR SPEED

In the past, prime number research on microcomputers has suffered from one or two serious problems. Either the programs used were pretty pokey or they were severly limited by the memory size of the hardware. My SuperSieve program doesn't suffer on either count. It can find any prime number between 1 and 16,777,216 (that's 256 cubed) and put much more expensive machines to shame with its speed. It does so by using a small sieve array (255 bytes) over and over again and doing it with a USR machine language call from BASIC.

I wrote an earlier all-BASIC program that found each prime number and listed it to the screen. On an Atari with the screen turned on, the first million numbers took eight hours to process. This version runs the same data in 41 seconds. Numbers going by that fast are impossible to read so we turned the screen off and got down

the time to under 28 seconds. Super Sieve processes more than 35,700 numbers per second!

One communications use for prime numbers is closely related to computers, specifically the high resolution two-color screens that are common on home machines. The search for extra-terrestrial life requires that we send and receive messages to and from civilizations that we know nothing about. If we draw a two-color picture on a TV screen with dimensions of 317 X 191 pixels—nearly an Atari Graphics 8 size—we can repeatedly send the message picture with confidence that a civilization technically on par with ours could easily figure out that the 60,547-bit signal was, in fact, a 317 X 191 display.

Coding and decoding methods now use products of primes as a key. The message can't be decoded without the two correct primes and large prime numbers are not easily found.

**Super Sieve processes over 35,700 numbers in a second.**

## USING THE PROGRAM

Type in Listing 1, SIEVE.BAS, check it with TYPO II and SAVE a copy before you RUN it. Listing 2, SIEVE.M65, provides the MAC/65 source code for assembly language programmers to study. It is not necessary to type Listing 2 in order to use the program.

SuperSieve will offer you three choices; test a number to see if it's prime, find an "nth" prime number, or exit the program. Choice 1 brings quick rejects if you try to test an even number, or a multiple of five, or something larger than 16,777,213. Any other positive number will be tested.

If your test number isn't a prime, SuperSieve will tell you what the next larger prime number is. Select choice 2 if you want to find the 4th, 97th, 1,400,032nd, or some other prime. Running time depends on the size of your test number.

The attract mode comes on while the screen is off, so you will see various colors during the run. If you delete line 150, SuperSieve *will* test even numbers and multiples of five, telling you what is the nearest larger prime number. ▲

*Denis DeVries is an Engineering Manager for the City of Seattle. He debuts in* **Antic** *with his first assembler routine.*

*Listing on page 75*

TYPE IN SOFTWARE

# Doc Print-Pro

## Onscreen documentation printed minus garbage. By Roland Fetzer

***Doc Print-Pro is here to save you from crummy-looking paper copies of onscreen documentation files. This BASIC program works on all 8-bit Atari computers of any memory size, with disk drive.***

Have you ever tried to print hardcopies of onscreen documentation that looks fine when displayed in 40-column video but becomes a mess when you print it on paper? The text gets all crammed against the left margin and there are no page breaks. When you separate two sheets of paper, sometimes a line of text is cut in half. Even worse, sometimes there are no provisions at all for printing the screen documentation.

Doc Print-Pro puts in top and bottom margins and page numbers—and it centers the 40-column text. Best of all, it works on any printer, because it has no printer control codes.

Doc Print-Pro also makes it easier for you to read onscreen documentation. When you view a file, the screen displays about 18 text lines at once. Just press any key to scroll to the next screen.

Doc Print-Pro is a short program that makes good-looking printouts of documentation files which were printed to disk with a word processor. Most online text and onscreen text files are formatted this way. However, the program cannot read a normal word processor file.

### ABOUT THE PROGRAM

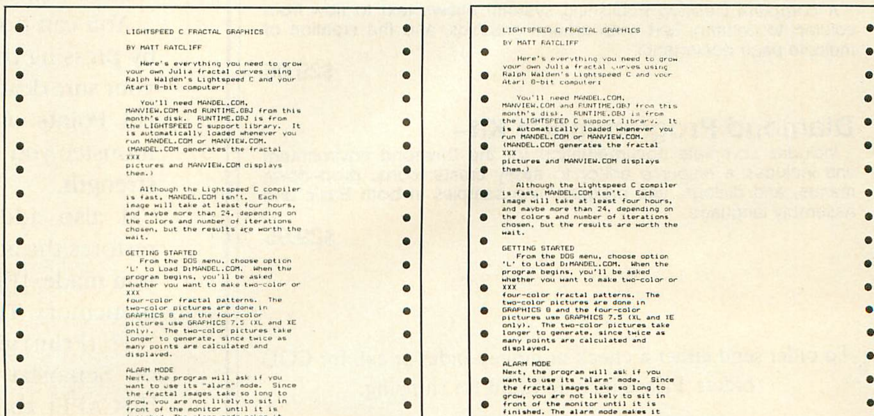
Type in Listing 1, DOCPRINT.BAS, check it with TYPO II and SAVE a copy before you RUN it. If you want Doc Print-Pro to RUN automatically when you insert the disk, SAVE it with the filename MENU and copy the AUTORUN.SYS file from any Antic Monthly Disk.

In screen mode, the program opens the disk file in line 240. In line 250 it counts the number of times the buffer is accessed. If that number is 18, then it goes to the scroll routine in line 470.

The print section starts on line 350 and counts how many times the print buffer is accessed. If it's 57, then it goes to the page-printing routine in line 490 and prints a page number. ▲

*Roland Fetzer has been teaching mathematics for 30 years, and computer science for six years, at Brooklyn junior high schools. He is an original* **Antic** *subscriber who owns every issue of this magazine.*

*Listing on page 74*



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LIGHTSPEED C FRACTAL GRAPHICS

BY MATT RATCLIFF

   Here's everything you need to grow
your own Julia fractal curves using
Ralph Walden's Lightspeed C and your
Atari 8-bit computer:

   You'll need MANDEL.COM,
MANVIEW.COM and RUNTIME.OBJ from this
month's disk.  RUNTIME.OBJ is from
the LIGHTSPEED C support library.  It
is automatically loaded whenever you
run MANDEL.COM or MANVIEW.COM.
(MANDEL.COM generates the fractal
XXX
pictures and MANVIEW.COM displays
them.)

   Although the Lightspeed C compiler
is fast, MANDEL.COM isn't.  Each
image will take at least four hours,
and maybe more than 24, depending on
the colors and number of iterations
chosen, but the results are worth the
wait.

GETTING STARTED
   From the DOS menu, choose option
'L' to Load D:MANDEL.COM.  When the
program begins, you'll be asked
whether you want to make two-color or
XXX
four-color fractal patterns.  The
two-color pictures are done in
GRAPHICS 8 and the four-color
pictures use GRAPHICS 7.5 (XL and XE
only).  The two-color pictures take
longer to generate, since twice as
many points are calculated and
displayed.

ALARM MODE
Next, the program will ask if you
want to use its "alarm" mode.  Since
the fractal images take so long to
grow, you are not likely to sit in
front of the monitor until it is
finished. The alarm mode makes it
XXX
easy to disconnect your disk drive
from your spare Atari (that's growing
your fractal curves) and attach it to
your primary computer.  Once the
fractal curves have been drawn, an
alarm will sound.  Now, reconnect the

                -1-
```

```
LIGHTSPEED C FRACTAL GRAPHICS

BY MATT RATCLIFF

   Here's everything you need to grow
your own Julia fractal curves using
Ralph Walden's Lightspeed C and your
Atari 8-bit computer:

   You'll need MANDEL.COM,
MANVIEW.COM and RUNTIME.OBJ from this
month's disk.  RUNTIME.OBJ is from
the LIGHTSPEED C support library.  It
is automatically loaded whenever you
run MANDEL.COM or MANVIEW.COM.
(MANDEL.COM generates the fractal
XXX
pictures and MANVIEW.COM displays
them.)

   Although the Lightspeed C compiler
is fast, MANDEL.COM isn't.  Each
image will take at least four hours,
and maybe more than 24, depending on
the colors and number of iterations
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GETTING STARTED
   From the DOS menu, choose option
'L' to Load D:MANDEL.COM.  When the
program begins, you'll be asked
whether you want to make two-color or
XXX
four-color fractal patterns.  The
two-color pictures are done in
GRAPHICS 8 and the four-color
pictures use GRAPHICS 7.5 (XL and XE
only).  The two-color pictures take
longer to generate, since twice as
many points are calculated and
displayed.

ALARM MODE
Next, the program will ask if you
want to use its "alarm" mode.  Since
the fractal images take so long to
grow, you are not likely to sit in
front of the monitor until it is
finished. The alarm mode makes it
XXX
easy to disconnect your disk drive
from your spare Atari (that's growing
your fractal curves) and attach it to
your primary computer.  Once the
fractal curves have been drawn, an
alarm will sound.  Now, reconnect the
disk drive and press the joystick
button to shut off the alarm.
Finally, follow the menu prompts to
save the image to disk.    IMPORTANT:
Be sure your disk drive is turned OFF
```

*Same page of screen text printout—with Doc Print-Pro enhanced version at LEFT.*

DISK BONUS

# Deluxe Adventure Creation Kit

## By Stephen Stout

Deluxe Adventure Creation Kit (CREATEDL.BAS) is an enhanced follow-up to my original *Adventure Creation Kit* (**Antic**, March 1988). It incorporates many suggestions that came from the Creation Contest (October 1988 Disk Bonus) as well as from other users of the first version.

Games made with the original *Adventure Creation Kit* are 100% compatible with this Deluxe version. Both Kit programs run on Atari 8-bit computers with at least 48K memory and a disk drive.

The most significant Deluxe upgrade is that now you can link as many as nine different adventure games into one giant game. It's very simple to do. Just give each adventure the same name with a number between 1 and 9 at the end—such as GAME1, GAME2, GAME3, etc. When you win GAME1, the program will automatically load GAME2, and so on until GAME9. When there are no more games, the program will say "You Won!" and return to the editing menu.

I also added some animated graphics. In the Deluxe Adventure Kit, the graphics don't only scroll as in the original version. Now the water moves, the snake's head and tail shake, etc.

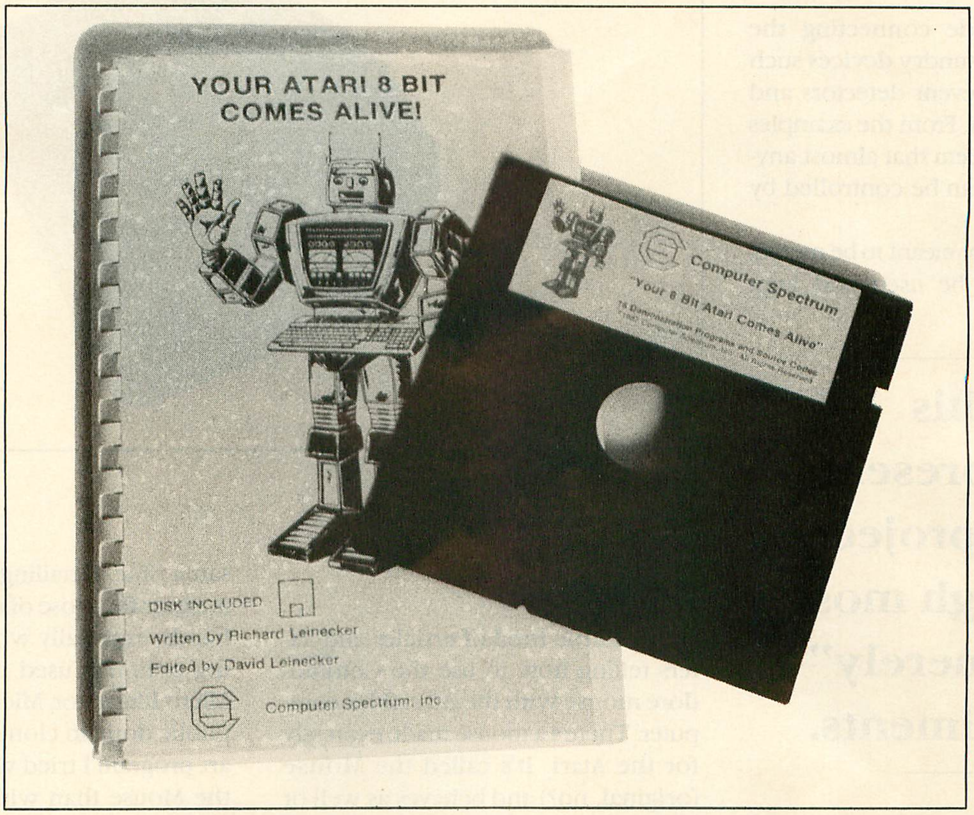
You can now flee from monsters during a battle by pressing the [SPACEBAR], instead of fighting to your sure death. Naturally you will receive *no* bonus Hit Points or Strike Points if you flee, and the monster you were fighting will regain its original strength.

I also added some editing changes: [U]ndo restores the adventure map, erasing the last change you made. [E]rase All clears the current adventure in memory. This replaces the old [RESTART] feature.

[?] (Print) gives you a choice of Epson, ProWriter or Seikosha GP-250X printers. Also, pressing [ESCAPE] aborts printing. Finally, when you kill monsters you don't get as many additional points as before, and you can't get more than 40 Hit Points or 15 Strike Points.

# 8-Bit Toolhouse

*The Mouse, Disk Emulator, Print Buffer, and more.*




*Your Atari 8 Bit Comes Alive!*

## ATARI 8 BIT COMES ALIVE!

Did you ever get the urge to open your Atari and attach some esoteric piece of hardware to it? If you're like me, you hesitated due to your inexperience with electronics or your awkwardness with tools.

**Your Atari 8 Bit Comes Alive** is a 207-page book, with a disk that has 18 BASIC programs plus source code for all the machine language subroutines. This package offers you the chance to experiment with less fear. Though soldering is often required, no *detailed* soldering is needed. I could just "slop it on" and still have these projects come out right.

When opportunities for damage do exist, the book carefully takes us by the hand and leads us to the desired result. *(Just remember that you void any Atari Corp. warranty left on your computer, as soon as you open up the case.*—ANTIC ED)

Richard Leinecker's book presents lots of projects, although most of them are "merely" of the experiment sort. How often will most of us find a practical use for a home-built oscillator? However, there are a few projects which you can get real use from.

Building your own light pen not only could give you a sense of accomplishment, it can fill a gap left by the lack of available commercial pens. As an added benefit, your home-made light pen can be used in place of the Atari Light Gun (available only with the XE Game System!). The pen you'll build works in Graphics 7, which is a nice drawing mode.

The book starts out assuming you really know *nothing* about elec-

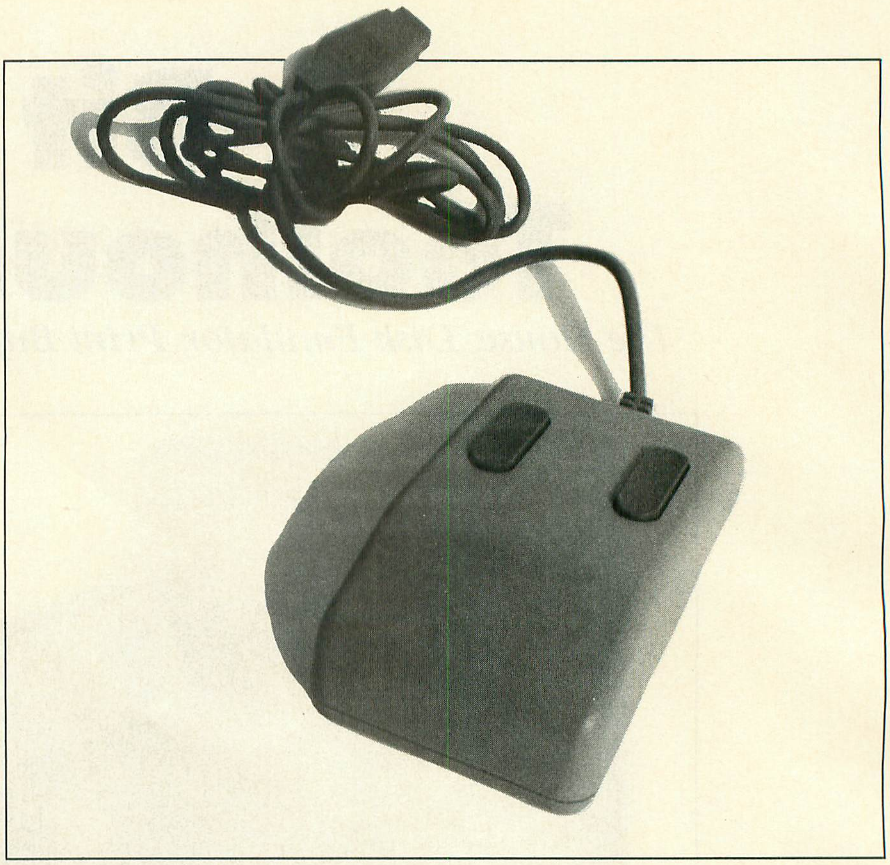
tronics. Detailed definitions and illustrations of basic equipment such as solderless and perforated breadboards are given. Necessary test equipment such as a multimeter and logic probe are defined in clear, understandable English. Schematics, incredibly, are made understandable. Schematics were the one thing which used to lose me almost immediately in electronics before.

Projects include connecting the joystick ports to sundry devices such as door alarms, event detectors and device controllers. From the examples given, it would seem that almost anything electrical can be controlled by your Atari.

This book is not meant to be merely read. It should be used and kept handy during each experiment and project. The sort of experimental kits you wished you could afford as a kid (Remember "Brainiac" and the "33 Electrical Experiments" packages?) are far outclassed by the unsung little Atari which sits upon your desk. All it ever required was the specialized knowledge provided by this outstanding book.—CHESTER COX

**This book presents lots of projects, although most are "merely" experiments.**

$25.95, 207-page book with 48K disk. Computer Spectrum, distributed by Horizon Computers, 695 S. Colorado Boulevard, #10, Denver, CO 80222. (303) 777-8080.



*The Mouse*

## THE MOUSE

I'm a little tired of articles and letters telling how to use the Commodore mouse with the Atari 8-bit computer. There's a mouse made expressly for the Atari. It's called the **Mouse** (original, no?) and behaves as well or better than the Commodore mouse.

Just as the Commodore mouse does, this Mouse acts like a joystick. Plug it into either joystick port and start using it. A true mouse (such as the ST's) scrolls across your screen in an entirely different, smoother manner. The pixel-by-pixel jumping of a joystick seems a bit jerky in comparison. Knowing the limitations enables us to use the Mouse for tasks at which it works best.

Its best use is, as you might have guessed, with drawing programs. RAMbrandt works delightfully with it. As a matter of fact, RAMbrandt permits you to use the Mouse (in place of a joystick) *and* a touch tablet at the same time. Detailing with the Mouse is easier for those of us with unsteady hands, especially when the magnifying option is used. Blazing Paddles, Micro Illustrator, Micro-Painter and its public domain clone— in fact, every art program I tried works better with the Mouse than with a joystick.

Not all games work well with the Mouse. Playing Star Raiders with it is sheer suicide! But games which require instant locations are much more fun. Missile Command becomes almost winnable, Chessmaster becomes simpler. Software which has an interface similar to GEM works very well. Ogre, Gunslinger, Phantasie, and Lords of Conquest seem to have been *made* for the Mouse. XLEnt's First Word Processor is the only WP that takes advantage of the Mouse, a feature I wish PaperClip had.

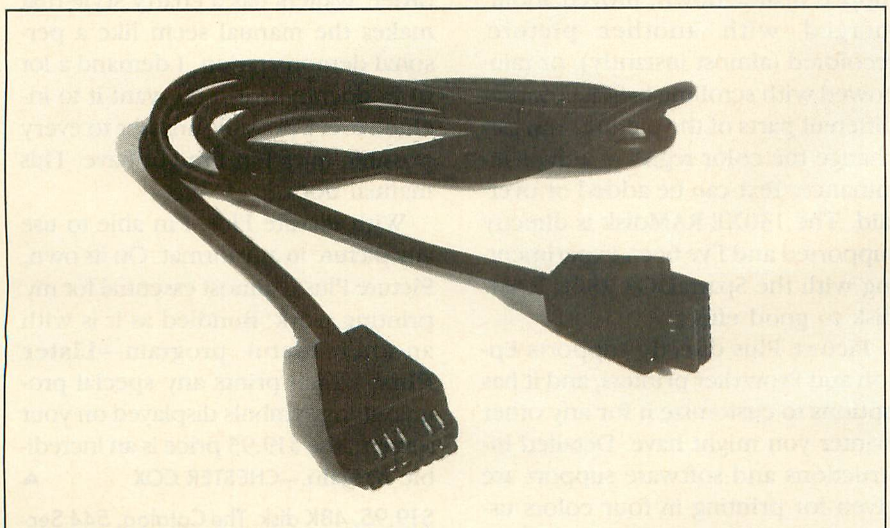
The Mouse looks pretty much as you'd expect a mouse to look—palm-sized, sloped in the middle, two buttons that each read just like a single

joystick button. It's all in XE gray color and very sturdy. My Mouse has been dropped a few times since Christmas and I've taken it apart to check it out. The rolling ball is exactly the same as the ST mouse ball. In fact, I switched them a few times with no changes in performance.

A mouse seems to be relatively expensive. IBM users pay up to $200 for theirs. So we get off cheap with the $59.95 price tag (frequently discounted to $49.95). It makes drawing with your 800/XL/XE downright pleasant.—CHESTER COX

**Just as the Commodore mouse does, The Mouse acts as a joystick.**

$59.95. Horizon Computers, 695 S. Colorado Boulevard, #10, Denver, CO 80222. (303) 777-8080.



*Cable used by Disk Emulator and Print Buffer*

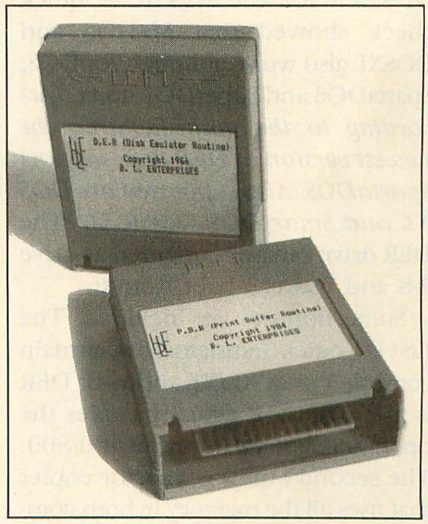
## DISK EMULATOR

Many Atari owners have more than one 8-bit computer. Some, like me, couldn't bring themselves to sell their faithful (and high-priced) old 800s when they bought an XL or XE. Others found used machines for less than $100 and couldn't pass up the bargain. Now B.L. Enterprises has come up with ways for you to put those extra Ataris back to work! **PBR**—Print Buffer Routine—turns your second computer into a printer buffer of just under 40K. **DER**—Disk Emulator Routine—turns it into a RAMdisk.

PBR is a very workable printer buffer. The file you print goes quickly into the buffer and your computer thinks the printing is finished—so you and the computer can go on to other tasks. Meanwhile, the buffer continues sending your information to the printer. Multiple files can be chained for sending to the buffer and will be printed in succession.

Through no fault of the manufacturer, PBR is inconvenient to set up for use. The Print Buffer Routine consists of a disk for the first computer, a cable to connect the machines through their joystick ports, and a cartridge for the second computer. Difficulties arise because the first Atari must be told to send the printer data out of the joystick port instead of the SIO port.

This configuration requires a small chunk of code to be squeezed somewhere into the main computer. If the main computer is an XL or XE, you can run the Translator or FIX-XL (not included). That frees 4K memory to hold the code. Then you boot your printing program. This should work with almost all software, but you have




*Disk Emulator and Print Buffer cartridges*

to boot three disks to get there. If your main computer is an 800 or 400, the process may be even more complicated and the system will be incompatible with more software.

PBR has several special features. With the console keys on the second computer, you can send a form feed, a single line feed, or a double line feed. You can also abort the printing and clear the buffer. It would be nice to also have commands that pause and restart the printing, print multiple copies and abort printing without clearing the buffer.

DER, the Disk Emulator Routine is much easier to use. Just plug in the special SIO cable (the DER computer must be last on the daisy chain). Then insert the cartridge in the DER com-

puter to turn it into a solid-state disk drive. It's much faster than a regular drive, but because it's limited by the 19,200 baud rate of the SIO port, it's slower than a built-in RAMdisk.

A 48K computer gives you 293 sectors of RAMdisk space, a 64K computer gives you 403 sectors and a 128K computer gives you 914 sectors. The best part of this RAMdisk is that it retains its information when you turn off the main computer—but not if you turn off the DER computer.

B.L. Enterprises recommends Atari DOS 2.5 for the system. A quick check showed that MyDOS and DOSXL also work, although TopDOS, SpartaDOS and SuperDOS don't. (*According to the manufacturer, the newest version of DER does support SpartaDOS. Also supported are DOS XL and SmartDOS.*—ANTIC ED) The DER drive can be configured as drive 1-8 and you can boot from it.

Some bonuses are included. The first is a quick Translator if your main computer is an XL/XE and your DER is a 400/800—it actually copies the operating system from the 400/800. The second bonus is a sector copier that uses all the memory in both computers. The final bonus is a routine to move DUP.SYS and MEM.SAV to the DER drive.

B.L. Enterprises has hinted that since DER is programmable from the main computer, future software upgrades (like a RAMdisk printer buffer) may be forthcoming.

Both products work as advertised and increase your system's productivity. DER gets an enthusiastic recommendation, PBR a more reserved one. If PBR fits your work style, you'll love it, otherwise you may find the setup routine annoying.

Finally, can you use both of these products at the same time? Yes. . .if you have three computers.—CHARLES CHERRY

$39.95 each. PBR and DER both require two 48K Atari computers and one disk drive. B.L. Enterprises, P.O. Box 7881, Louisville, KY 40207.

## PICTURE PLUS

You must like nice pictures in vibrant colors—after all, you own an Atari 8-bit computer. Undoubtedly, if you enjoy drawing on an Atari, you have your favorite art program. However, there are those great pictures done with other art programs—which your program can't read..

**Picture Plus** is a package of utilities by Chet Walters. It loads at least eight different kinds of picture files and will then save to any of the eight types. It's one of the few products which will load light pen files.

Picture Plus also enables you to manipulate a picture in strange and arcane ways while it's in your Atari's memory. The picture can be rotated, flipped upside-down, moved about, merged with another picture, recolored (almost instantly), or rainbowed with scrolling bright colors at different parts of the picture. You can change the color registers and/or luminance. Text can be added or overlaid. The 130XE RAMdisk is directly supported and I've been experimenting with the SpartaDOS 256K RAMdisk to good effect.

**With Picture Plus, I'm able to use any picture in any format.**

Picture Plus directly supports Epson and Prowriter printers, and it has options to customize it for any other printer you might have. Detailed instructions and software support are given for printing in four colors using colored ribbons or carbons on a normal dot-matrix printer. There is also an option to switch to low-res graphics on your printer and create huge posters.

Three extra programs are included on the Picture Plus disk. One, PICLOAD.BAS, can be added to your homemade BASIC programs to load Micro Illustrator or Micro-Painter pictures, distinguishing between the two. EXPAND.BAS converts any font on disk to double its original width. Most useful (okay, most fun!) is PICSHOW.BAS, a slide-show program which loads and displays any Micro-Painter or Micro Illustrator pictures with a time delay of your choosing. It can rainbow your pictures, add a gong to let you know when they change, even permit you to switch disks in the middle of a run. With little effort, I changed the program to read files from a RAMdisk, saving my drive during displays.

A word should be said about the documentation. All of The Catalog's 5 1/4 inch disks have the documentation included on the disk with a utility for printing it on paper. Too often the manuals are obscure or skimpy. This, happily, is a major exception—the programmer actually writes a good manual! One read-through and you will be able to access any feature of Picture Plus with no difficulty. All commands are arranged in a logical order. Walters has a chatty style that makes the manual seem like a personal demonstration. I demand a lot from documentation. I want it to include every possible answer to every possible question I might have. This manual does.

With Picture Plus, I'm able to use any picture in any format. On its own, Picture Plus is almost essential for my printing work. Bundled as it is with another useful program—**Lister Plus**, which prints any special programming symbols displayed on your screen), the $19.95 price is an incredible bargain.—CHESTER COX

$19.95, 48K disk. The Catalog, 544 Second Street, San Francisco CA 94107. (800) 234-7001.

TYPE IN SOFTWARE

# LOTTOPIK

Pick the winning numbers with your Atari. **By Dr. John Ferguson**

*Use the Atari's random number generator to create ready-to-use lists of Lotto number choices. Your odds against winning may still be impossible, but at least you won't need to agonize over which numbers to pick. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.*

Win millions! The dream is wonderful, even if the odds are nearly impossible. . .

. . .Nevertheless, most states now have their Lotto games, and playing them has become a national pastime. Playing is easy, but choosing "lucky" numbers can really be agonizing. People play "favorites," birthdays, ages, addresses, telephone numbers, hunches, or just close their eyes and point.

One thing is for sure—any set of numbers is just as likely to win as any other. The people running lotteries go to great lengths to ensure this. On the other hand, prizes are divided among those that choose the same winning numbers, so your best chance of winning—remote as that may be—is to pick numbers other people don't. Such numbers have an equal opportunity to win, but pay more.

The question is, what are those less-used numbers? How do you avoid all the psychological biases that lead to picking numbers that are too popular? The obvious answer is to match the way the lottery numbers are chosen in the first place—use a purely random system. The catch is that picking numbers randomly, even with your own ping-pong balls, is not very easy.

However, your Atari computer has a built-in function that generates pseudo-random numbers. LottoPik is a short BASIC program designed to pull these numbers out of the computer and display them for you in an easy-to-read, printable format.

So get lucky. Type in Listing 1, LOTTOPIK.BAS, check it with TYPO II and SAVE a copy before you RUN it.

## WHAT LOTTOPIK DOES

Actually there are a number of useful steps that LottoPik carries out for you. Of course, it first must calculate a random integer within the correct range. Then LottoPik does this five more times to create the set of six numbers in the Lotto format. It also makes sure that none of the six numbers are duplicates.

Making it easier to read and transfer the numbers, LottoPik sorts and displays them in ascending order. The program also uses a string function to convert the numbers into a consistent two-digit form, just to keep things neat. Since a Lotto card usually lets you play as many as five games at once, the program repeats the above steps five times and displays all the numbers needed to complete a single card. To display another full set of numbers, press [RETURN]. Finally, LottoPik lets you print the results, using a simple driver that should work with any printer.

**Choosing "lucky" numbers can be agonizing.**

LottoPik is very easy to use. But before you RUN it, change the variable X in line 5 and make it equal to the highest number which can be chosen in your state's Lotto.

I haven't won yet, but I have had my money's worth of fun. I hope you have better luck. ▲

*Dr. John Ferguson is a marine biology professor at Eckerd College in Florida. An expert on starfish, he published* Beer Party Atari *in the May 1985* ***Antic****.*

*Listing on page 77*

# FLOWER GARDEN

## INSTANT "ROSE-EQUATION" GRAPHICS

USE THE CLASSIC MATHEMATICAL "ROSE EQUATION" TO CREATE AN ENDLESS VARIETY OF FLOWERLIKE IMAGES FOR SCREEN DISPLAY OR PRINTOUT. THE BASIC PROGRAM WORKS ON 8-BIT ATARI COMPUTERS WITH AT LEAST 32K DISK OR 24K CASSETTE.

BY ALLAN MOOSE AND MARIAN LORENZ

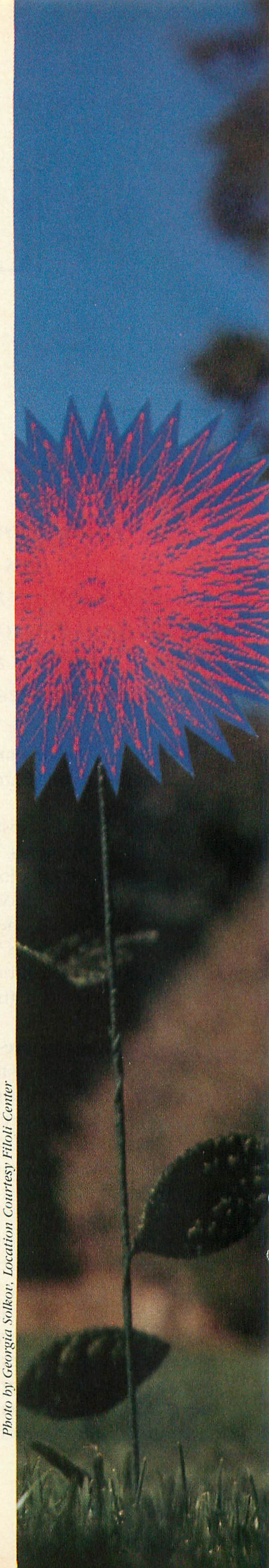


Photo by Georgia Solkor, Location Courtesy Filoli Center



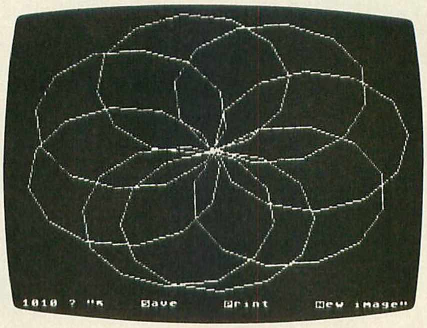
Major advances in computer graphics have been achieved during the past 20 years and we sometimes forget that a simple line drawing program based on a mathematical function can produce pictures of unexpected beauty. This article demonstrates how to grow a flower garden of graceful symmetric designs with your Atari.

The popular Cartesian coordinate system identifies a point on a plane by giving its distances from two perpendicular axes. These axes are usually labeled X and Y.

Perhaps less well known is the polar coordinate system. This system locates a point by giving its distance from the center of the coordinate system, plus an angle. For example, a fighter pilot crying out "enemy at six o'clock, nine miles out" is using a form of polar coordinates. The distance here is nine miles and the angle is 180 degrees (six o'clock).

The distance, usually labeled r for radius, is the distance from an origin, O. The angle, often labeled Theta (Θ) or Phi(Φ), is the angle between the horizontal axis and a line drawn from the origin (O) to the point (P). See *Figure 1.*

The rose equation, *r = R * sin(n)*, is one of the most popular illustrations of polar coordinates.



In this equation, R is a constant that determines the size of the graph and n is an integer. A graph of this equation has n petals if n is an odd integer and 2n petals if n is an even integer. *Figure 2* shows the graph if R = 80 for n = 2 and n = 3.

The program accompanying this article draws polygons inside an n-petaled rose. This program is ideal for experimentation and you will find yourself spending hours "growing flowers."

## GETTING STARTED

Type in Listing 1, FLOWERS.BAS, check it with TYPO II and SAVE a copy before you RUN it. When RUN, the program will ask you to type values for N and Alpha (the angle increment). Then your Atari will draw your flower.

When it's done, type [S] to save your flower as a Micro-Painter-compatible disk file called "D:PICTURE" — the program doesn't save to cassette, sorry. Type [P] to print your flower with any Epson-compatible printer, or type [N] to erase your flower and begin a new one.

## HOW IT WORKS

1. Type in values for N and Alpha.

2. Next, the program initializes Count, Countstop, Delta and Deltainc. Countstop is a value that stops the program when the figure is completed. Delta is an "angle monitor." It prevents the program from drawing degenerate figures made from a single point or just a few lines. Delta insures that the ending point meets the starting point. Otherwise, the program continues drawing.

3. Now the program gets the starting point for a drawing sequence. It sets the angle Theta = Delta, computes the points Phi = π * (Theta)/180 and R = Radius * Sin(N * Phi). Finally it converts these polar coordinates (Phi, Theta) to rectangular coordinates and stores the result in Xold and Yold.

4. Next, add Alpha to Theta. If Theta is greater than or equal to 360 replace Theta by Modulo (Theta) to keep its value between 0 and 359. An explanation of Modulo is given later in the article.

5. Compute N * Theta. Reduce it by Modulo 360 and store the result in Phi. Compute R = Radius * Sin(Phi).

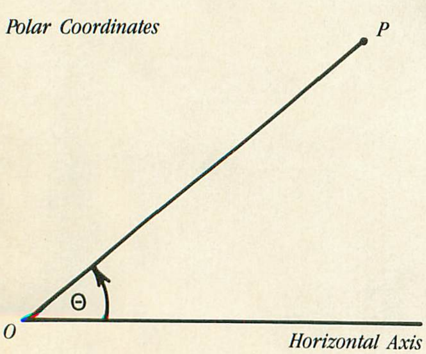
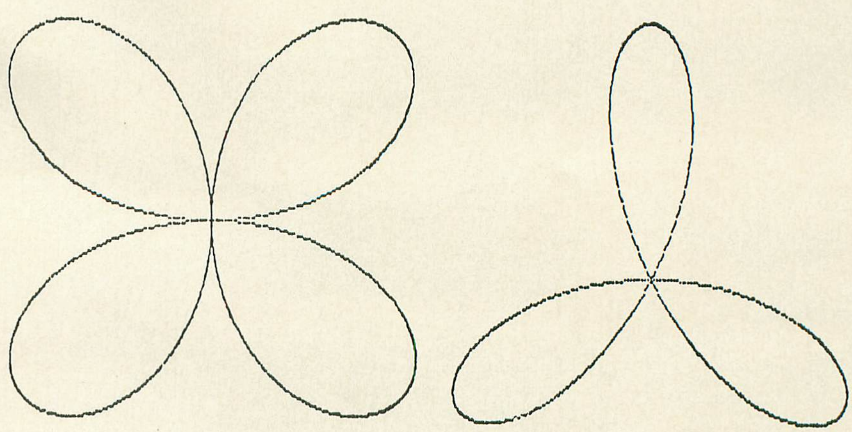



FIGURE 1



*R=80 n=2*   *R=80 n=3*

FIGURE 2

6. Change the polar coordinates (Theta, R) to rectangular coordinates called Xnew and Ynew.

7. Draw a line from (Xold,Yold) to (Xnew,Ynew).

8. Increment Count.

9. Check Theta. If Theta = Delta, go to step 10. Otherwise set (Xold,Yold) = (Xnew,Ynew) and go back to step 4.

10. If Count is greater than or equal to Countstop, stop plotting. Otherwise set Delta = Delta + Deltainc and go back to Step 3.

## PROGRAM NOTES

The radius in steps 3 and 5 depends on your computer. For an 8-bit Atari use Radius = 80.

The Modulo function (Mod) returns the remainder after a division. For example, 45 divided by 6 is 7 with a remainder of 3. The results of 45 Mod 6 would be 3. This is known as modular arithmetic. Unlike ordinary arithmetic which uses an infinite range of numbers, modular arithmetic numbers repeat after a given cycle. The program uses the Modulo function to make sure that the angles Theta and NTheta stay between 0 and 359.

EXAMPLES:

359 Mod 360 = 359
360 Mod 360 = 0
361 Mod 360 = 1

## EXPERIMENTING

Observe how a drawing evolves when N remains constant while Alpha ranges from 1 to 360 degrees. For small values of N, you will find similarities in how the figures evolve as Alpha varies from 1 to 90 degrees. A smooth line drawing at small Alpha values becomes wider and more lacy as Alpha increases, until the design fills in and a squarish figure appears in the center. Continuing beyond 90 degrees up to 180 degrees will, in a sense, reverse the figure's evolution.

Also try large values of N and small values of Alpha. Interesting loop-like figures are produced with N = 92, Alpha = 16 or N = 206, Alpha = 28. However, to draw these loop-like figures you must change Deltainc to 1 and Countstop to 360 first.

N = 6 and Alpha = 72 draws a rotating star which evolves into a "flower" that bears no resemblance to the star which drew it.

You can also try reversing the values of N and Alpha. For example N = 200 and Alpha = 20 produces an interesting flower. N = 20 and Alpha = 200 also produces an interesting design. Not all reversals make pretty flowers, but the possibilities for creating a garden are endless. ▲

---

*Allan Moose and Marian Lorenz are teachers on Long Island, New York. Their mathematics-oriented programs have often appeared in Antic. Most recently was* Got-A-Minute Graphics *in February 1988.*

*Listing on page 67*

# Lightspeed C

## Move up to high-level programming. By Matthew Ratcliff

Most serious Atari 8-bit users learn BASIC and *many try* assembly language, but the trend in the computer industry and education is toward high-level languages such as Pascal, C and Ada. The current language of choice for the Atari ST and most other personal computers is C. If you're ready to move up to the structured programming world of C, for just a small investment, **Lightspeed C** ($34.95) is just your speed.

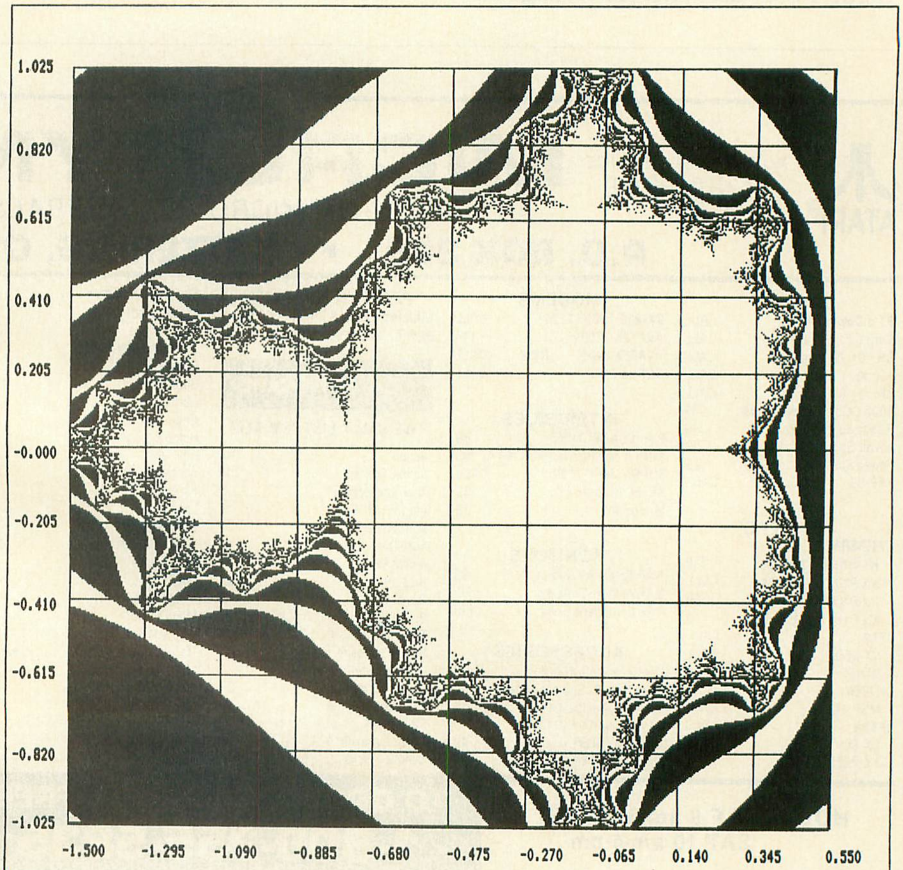
**Floating-point is slightly quirky in Lightspeed C.**

This C compiler comes on several disks and includes Lightspeed DOS as well as support files for SpartaDOS. A runtime library is required for SpartaDOS, but it's integrated with Lightspeed DOS. Everything you need to create an executable C program is provided with the compiler, linker and optimizer. You can use the C program editor (CEDIT) to create your own programs or develop them with an editor of your choice.

Lightspeed C supports floating-point and trignometric functions and provides many other features, such as a fast graphics package, that you would not expect to find in such an affordable program.

Floating-point is rather quirky in Lightspeed. All your variables must be declared as six-character strings instead of "float" values. For example, in standard C we would declare and multiply two floating-point numbers as follows:

```
float x, y, z;
x = 1.75;
```




*1. Complete Mandelbrot Set, generated with a Lightspeed C program.*

```
y = 3.45;
z = x * y;
printf("%f TIMES %f is %f\", x, y,
z);
```

Here's how you do it in Lightspeed C:

```
char x[6], y[6], z[6];
atof(x, "1.75");
/* Ascii to floating-point */
atof(y, "3.45");
/* conversion */
fmul(x, y, z);
printf("%f TIMES %f is %f\", x, y, z);
```

I had few problems using Lightspeed C to create a sophisticated fractal generation program, which is floating-point intensive. The listings for this fractal demonstration are bonus files on this month's Antic Disk, details are explained at the end of the article.

The biggest problem with floating-point in Lightspeed is there is no support for floating-point compares (in IF and WHILE statements). It takes some unusual string manipulation techniques to handle the job.

## INTEGRATED ENVIRONMENT

The most impressive feature of Lightspeed C is its totally integrated programming environment—if you use the C editor. CEDIT is virtually identical to the editors in MAC/65 and BASIC XL in that you use line numbers for referencing, and auto-entry is supported. From here, the power of Lightspeed becomes apparent.

Pressing [BREAK] to exit the auto-entry mode invokes the Lightspeed syntax checker. The code you just entered is immediately checked for syntax errors, saving you valuable time in debugging compile errors. The syntax checker isn't smart enough to check for multiple line statements, however, occasionally reporting bogus errors. For example, the following would result in a syntax check error with an "unbalanced parenthesis" indication:

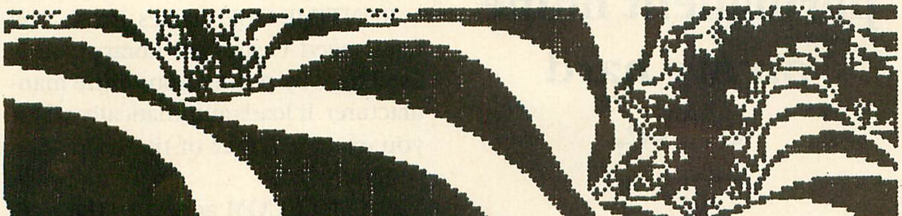
```
1200   x = ( (a + b)
1210   * (c + d) );
```

The code above is correct, however, and won't generate a compile error. This is not a bug in the syntax checker, just a limitation in that it only checks syntax by physical lines and not logical lines.

Line numbers are used only for reference. CEDIT lets you list a code block to the display and then use the cursor keys to perform full-screen editing. If new code needs to be inserted, the auto-entry mode simply asks for the line to follow with new code. You need not worry about running out of line numbers while inserting either, since CEDIT will take care of this automatically. This is an improvement over MAC/65 or BASIC XL, which force you to stop code entry, renumber, and then continue inserting.

Once your source code is complete, you can save it to disk or compile it with auto-save. CEDIT uses Lightspeed DOS and SpartaDOS to full advantage, simulating batch-command files. You can specify compilation of your source code, automatically followed by LINK (the linker) and RUN. If there's an error during compilation, enter the drive number containing CEDIT. Control will go back to CEDIT, with the errant line displayed as well as a descriptive error diagnostic. If no errors occur, the intermediate file is LINKed and then RUN.

Use the FASTER utility to optimize a compiled file. According to the documentation, FASTER can be part of the compile, link and run command line. This confuses Lightspeed, however, and the linker attempts to link your program with FASTER.CCC



*2. Extreme close-up of the image on the oppposite page.*

and create a FASTER.COM file, thus trashing your FASTER utility. Generally I just compile, link and run until the program is fully debugged. Then I run FASTER separately. After optimization, relinking results in a smaller, faster program.

Using a RAMdisk or a hard disk speeds up the whole process considerably. Running Lightspeed C from floppies works just fine, but it's rather slow. You cannot compile directly to memory as you can with ACTION! or MAC/65.

SpartaDOS users will need RUNTIME.OBJ on the same disk as the .COM file created by the linker. When the .COM program is executed, the runtime support library is retrieved from disk automatically. You can put the runtime and executable files on disks with Atari DOS 2.0 or 2.5, or with just about any other DOS disks, and run them if the LOMEM doesn't conflict with the memory requirements of the Lightspeed files. Memory use is reported by the LINKer program.

## THE MANUAL

The Lightspeed C manual is well-written and complete, except for the notable lack of an index. All other C manuals I've used have a full alphabetic list of the functions supported. Lightspeed has a handy command summary—by category—in the middle of the manual. (It should have been printed on the inside cover for quicker access.)

Kernighan and Ritchie's C Programming Language is considered the standard for all C compilers. Lightspeed C measures up quite nicely, considering the 8-bit's memory limitations and a low-tech microprocessor like the 6502. Appendix A of the Lightspeed C manual covers all its differences and shortcomings relative to the Kernighan and Ritchie standard—a very honest and useful reference.

If you want to get into the more advanced features of C, such as structures, unions and multidimensional arrays, forget it. Lightpseed C can't handle them. This is its most significant limitation.

Lightspeed C makes the transition from BASIC to C painless with equivalent functions for PEEK, POKE, GRAPHICS and more. The most-used procedure of C has to be printf—print formatted output. Lightspeed supports it fully, including output of floating-point numbers.

If your application is too large to fit in memory, it can be broken up into separate modules. Lightspeed C lets you chain between programs, with a command line DOS such as SpartaDOS or their own Lightspeed DOS.

File input/output conforms closely to the standard. Lightspeed provides full support for Player/Missile Graphics and an advanced graphics manager package with functions like mbox, mfill, circle and more. DCOPY comes with Lightspeed to help manage your files.

> **Lightspeed C has found a permanent home on my hard drive.**

I have found Lightspeed C to be complete and extremely user-friendly. I have been programming in C on the ST, PC and mainframe computers for a couple of years now, and I find the Lightspeed programming environment among the most elegant. With all the other "bigger computers" you must *manage* your file creation with a MAKE facility. Lightspeed C automatically generates your MAKE files for the linker.

You won't be able to write extremely large applications in Lightspeed without a lot of chaining, since its smallest runtime library is over 7K. Lightspeed C is a welcome relief from the tedium of assembly language programming and chaos of developing large BASIC programs.

Lightspeed C has found a permanent home on my hard drive and is currently my 8-bit language of choice for utilities and graphics development. Try it—you'll love it.

## DEMOS ON DISK

To grow your own fractals you will need MANDEL.COM, MANVIEW.COM and RUNTIME.OBJ from this month's Antic Disk. A complete fractal picture is also on the November 1988 disk. Choose selection 5 from Side A of the Antic Disk to read complete operating instructions. And for full explanation of how fractal images are created on your computer, see the April 1986 *Computer Mathematics* issue of **Antic**.

RUNTIME.OBJ comes from the Lightspeed C support library and is used here by permission of the manufacturer. It loads automatically when you execute either of the other two programs.

MANDEL.COM generates the fractal pictures, a slow process with any computer and software. Each completed image will require four hours or more. Load the program from DOS and select your parameters by following the prompts. Sample values are included at each prompt to start you off, or you can select values following the instructions in the HELP file on Side B of this month's disk.

MANVIEW.COM is used for displaying finished fractal images. Load it from DOS and follow the prompts. Press [RETURN] to move to the next picture and press [ESC] to return to DOS.

LIGHTSPEED C
Clearstar Softechnologies
P. O. Box 140
Harrells, NC 28444
(919) 532-2359
$39.95, 48K disk

# Print Shop Shareware Bonanza

**Charles Cherry** reviews
Icon Printer, Video Jukebox and four more…

If you produce useful products at reasonable prices and make them easy to use, I'll write raves for you. One 8-bit Atari programmer who qualifies is Chris Wareham of Shepherd Software. You may recall my enthusiasm for his Billboard giant-banner program in the February 1988 **Antic**. Well, Chris has followed that up with another six interesting shareware and public domain offerings.

The most significant are **Icon Printer** and **Video Jukebox** ($10 each), utilities for Broderbund's ever-popular Print Shop. Icon Printer prints 49 icons per page. It dumps an entire disk of icons to your printer automatically, complete with names, in disk order or alphabetical order. As a bonus, Icon Printer lets you rename icons. Like all of Chris' programs, the user interface is clean and simple.

Icon Printer is set up for Epson FX printers and compatibles, but can be modified to support almost any printer. Even if you only use Print rarely, you need a program like this.

There are lots of utilities for Print Shop icons, but Video Jukebox is the first I've seen that addresses the program's Screen Magic capabilities. Basically, it converts Micro-Painter and Micro Illustrator screens to Screen Magic format and back, meaning that you can capture Screen Magic kaleidoscopes for your paint programs and add fancy Print Shop lettering to your microscreens.

Video Jukebox does other things that are less useful but more fun. It displays pictures while running the Atari rainbow in the background—incredibly dramatic with the Print Shop kaleidoscopes. The rainbow can be changed by pressing any key combination, producing more variations than I thought possible.

Video Jukebox can play music while the picture is displayed, affecting the speed of the rainbow in strange ways. The overall effect can be amazing. Pokey Player, the excellent public domain program, is used to produce the music and is included on the disk along with 34 songs. I would say that the easy-to-use Video Jukebox is another must-have for Print Shop junkies and a very useful tool for people who want Print Shop fonts in their microscreens.

**F-15 Construction Set** ($7) lets you design new flight maps for MicroProse's F-15 Strike Eagle. It requires the original game and is a little tough to set up. But after you've got it working, you can easily modify the existing missions, save them and play them. There are a few restrictions such as not having more targets than the original mission, but you get enough flexibility to keep up with world events.

**DO-Disk** ($7) is the only clunker in the batch. It's basically a sector *reader*—not a sector editor—that lets you search for a character string, or map (trace) the files. The results can be printed either onscreen or on the printer. But DO-Disk can't change the data on the disk, it can't even display the data in hexadecimal format. Any decent sector editor will run rings around DO-Disk.

Interestingly, DO-Disk includes a "mini" sector editor—L. Fogassy's public domain Modify Utility. It's more useful than the DO-Disk, and together they're almost a complete system. Still, you'd be better off with a full-featured sector editor.

The final product is a public domain nutrition tracking program, **Eat Well, Live Long, Prosper!** ($5), based on a public domain BASIC program by Vance Houston and translated into ACTION! You enter your statistics (age, weight and sex), and then Eat Well asks what you ate (or plan to eat). You choose your answer from a list of almost 500 items (you can add to the list).

Try the programs. If you like them, send the money to Shepherd Software. All of them, even the DO-Disk, are easily worth the low price. Do yourself a favor and introduce yourself to Chris Wareham's work. By the way, the latest version of **Billboard** ($10) is much easier to configure for various printers.

48K disk. Shepherd Software, 1215 West Jackson, Spearfish, SD 57783.

## EDUCATION

**EARTH VIEWS** - An electronic globe with a variety of map formats and views. (APO141) ........ $19.95
**MAPWARE** - Add maps to your programs. 9,000 pairs of coordinates available. Requires Atari Basic. (APO134) ........ $19.95
**MEMOREASE+** - Learn to memorize efficiently and quickly. (APO163) ........ $19.95
**ORBIT: A TRIP TO THE MOON** - On board computer, graphic display control panel and variable Earth and Lunar views. Requires 48K RAM. (APO168) ........ $15.95
**SPACE BASE** - A must for telescope owners. Requires 48K RAM. (APO142) ........ $19.95
**SPEEDREAD+** - Learn to read faster with less effort. Requires 48K RAM. (APO164) ........ $19.95

## UTILITY

**BASIC VIEW** - A must for all programmers. (APO192) ........ $19.95
**DISK SCANNER** - A complete disk editor for single and double density drives. (APO145) ........ $5.95
**ENHANCED POKEY PLAYER** - Input and edit music. Tutorial included. Requires Atari Basic. (APO147) ........ $15.95
**THE ENHANCEMENT DISKS** - B/Graph's utilities. Requires Atari Basic. (APO190) ........ $19.95
**ENVISION** - Create stand-alone pictures or produce Basic and Assembler Source Codes. Requires Atari Basic, MAC/65, SynAssembler, Epson-compatible printer. (APO185) ........ $19.95
**GRAPHIC SHOP** - Use most Atari picture files for Print Shop signs, banners, letterheads, etc. Requires Print Shop. (APO156) ........ $19.95
**PICTURE PLUS 3.0 AND LISTER PLUS 1.5** - The complete graphic utility set. Requires 48K RAM and Atari Basic. (APO179) ........ $19.95
**PRINTER DRIVER CONSTRUCTION SET** - Make AtariWriter compatible with every printer. Requires AtariWriter. (APO131) ........ $19.95
**SCREEN PLOT** - Print color micro-screens on most plotters. (APO135) ........ $5.95
**SHERLOCK 1050** - Restore crashed disks with the trace option feature. (APO155) ........ $19.95
**SOLID OBJECT MODULE** - Create 3D objects easily. Requires 48K RAM and RAMbrandt. (APO182) ........ $15.95

## PUBLIC DOMAIN

**PHOTO GRAPHICS** (PD0017) ........ $10.00
**ANTIC FORTH** (PD0020) ........ $10.00
**THE FIX XL** (PD0026) ........ $10.00
**CROCKFORD'S WHIMSY** (PD0033) ........ $10.00
**VT100 TERMINAL EMULATOR** (PD0037) ........ $10.00
**CUES EDPACK #1** (PD0044) ........ $10.00
**CUES EDPACK #2** (PD0045) ........ $10.00
**HEAVY METAL ART** (PD0060) ........ $10.00
**ASTRONOMY & METEOROLOGY** (PD0063) ........ $10.00
**130 XE ARTSHOW** (PD0065) ........ $10.00
**DOS 4.0** (PD0067) ........ $10.00
**130 XE HI-RES DESIGNER** (PD0070) ........ $10.00
**RAMBRANDT COLLECTION** (PD0073) ........ $10.00
**STEVE DONG'S GALLERY** (PD0074) ........ $10.00
**1030 EXPRESS** (PD0081) ........ $10.00
**850 EXPRESS** (PD0082) ........ $10.00
**MPP EXPRESS** (PD0087) ........ $10.00
**TEKTRONICS 4010 GRAPHICS TERMINAL EMULATOR** (PD0083) ........ $10.00

All software listed works with Atari XL and XE systems.

### HOW TO ORDER BY MAIL

Send check or money order to: Antic Software, #ML8A, 544 Second Street, San Francisco, CA 94107. $20.00 minimum order. Please include $3.00 shipping and handling per order. California residents please add 6.5% sales tax.

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# ST Resource

The guide to ST game software

November 1988




# *Stellar Crusade*

## ST vs. PC Reviewed by **Steve Panak**

I've been waiting for this one. Ever since I reviewed Interstel/EA's Empire, the premier space wargame for the ST, I've waited for someone with the guts to try and top it. And while SSI has achieved this lofty goal—at least in some aspects—with **Stellar Crusade**, this simulation is particularly demanding. Only seasoned, committed generals need apply.

This intermediate-to-advanced-level game simulates, in great detail, an expansionist policy in a galactic arena. The most advanced level of play has two competitprs(one can be the unforgiving computer)first exploring and then colonizing star systems. Slowly the players build up to the degree of economic strength necessary to control the entire star cluster.

Mineral-rich planets become mining colonies, while those with good soil will feed the millions of workers you enslave in your war machine factories. After you obtain a few choice planets, you'll start designing your star ships,

arming them with varied offensive and defensive weapons. Group the star ships into fleets, led by commanders of your choice. The ultimate goal is nothing less than galactic domination. Good luck.

Stellar Crusade's complexity level demands a warning label, as I realized upon my first load. A veteran of hundreds of games in three computer formats (Atari 8-bit, ST and PC), I rarely have *any* trouble learning to play a game. Yet I couldn't even succeed in starting to play Stellar Crusade on its first load.

## BEAUTIFUL GRAPHICS

Graphically, Stellar Crusade is beautiful. The main display contains a map of the galaxy, while an intuitive command interface lets you examine each star system to check its manpower and production levels. Of course, your information is only as good as your last contact—you might have lost the system to enemies by now.

The generous manual attempts to explain the operation of this complex game, but be prepared to invest a substantial amount of time learning to play. PC and ST versions play identically, and both can be copied to a hard drive. To help you test the waters

**Graphically beautiful, with an intuitive command interface**

without drowning, some of the introductory scenarios support only battle and/or exploration phases, leaving the full game, with its complex economic phase, to the all-encompassing Long Campaign. If you get through this one, you're ready for anything.

## PC AUTO-MODE

The PC version supports all IBM-compatible graphics modes, with Hercules monochrome being the closest in resolution to the ST. Installation is a snap because Stellar Crusade automatically selects the correct graphics adapter as it loads. Note that a stock 8088-based PC slows play with its lengthy screen updates. At least an 8 megahertz machine is recommended, along with a mouse.

Overall, I recommend Stellar Crusade, but with this caveat: It's tough to learn, demanding to play and requires a substantial commitment of time. However, if you make that commitment, you won't find a more detailed outer space simulation on this planet, or any other.

$54.95, color ($49.95, IBM). Strategic Simulations Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353.

*By* GREGG PEARLMAN, *Antic Assistant Editor*

## FIVE FROM TAITO

**Operation Wolf** is a commando-style attack adventure from Taito Software, the people who brought you Space Invaders back in those primordial ooze days of the late 1970s. Operation Wolf features arcade graphics, copious sound effects and multiple levels of play—as do all of Taito's new games.

**Renegade** pits you against tough street thugs as you strut around the dangerous part of town. Your only weapons are your wits and your karate know-how as you decimate gangs of punks, whacking them into submission and leaving them twitching on the ground, pleading for mercy (which you won't show them).

Fire pits, flaming swords and underground realms abound in **Rastan**. In this magical land of excitement and power, you can live the death-defying life of a mythical warrior with mythical powers. In **Alcon**, the action is on a much larger scale—an interplanetary war. You'll be firing lasers or homing missiles and dropping bombs as you battle against deadly aliens.

**Bubble Bobble** is somewhat less violent than the rest of the Taito line. Here, Bub and Bob are on the run from Evil Beasties in this 100-screen entry based on the chuckle-inducing arcade game.

$39.95 each, color. Taito Software Inc., 267 West Esplanade, North Vancouver, BC, Canada V7M1A5. (604) 984-3344.

## DIVE BOMBER

It's 1941. The German battleship Bismarck has just sunk Britain's HMS Hood, killing 1,400. The British Admiralty has rushed its best torpedo bomber pilots to the carrier Ark Royal in the Atlantic. Their mission—destroy the Bismarck.

As a World War II flying ace, keep on the lookout for German U-Boats and E-Boats as well as fighter planes as you head towards the Bismarck. You'll be flying blind—there are no landmarks. You may eventually need to choose between rescuing your home carrier from attack, or destroying your target.

$49.95, color. Epyx (U.S. Gold), 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063. (415) 366-0606.

## WARSHIP

**Warship** is a World War II tactical wargame set in the Pacific theater. This SSI game features the Pensacola, Exeter, Kirishima and just about every other warship that fought in the Pacific from 1941 to 1945. You can choose from 79 classes of warships or modify ship data to create your own battleships. Four scenarios are included—three historical and one hypothetical—but you also can create your own maps and scenarios. Your ST keeps track of every hit and calculates damage based on factors such as armor strength and hit location. Flooding, fire and other damage are also major factors.

$59.95, color. Strategic Simulations Inc., distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (800) 245-8525; in California, (800) 245-4525.

## POSITRONIC TRIO

**GradePlus** gives teachers a complete, easy-to-use, productive gradebook system for $25 dollars. **Test Maker**, also $25, lets you create and save tests that you've designed and formatted.

On the technical side, the **SeaChest** Library ($14.97) is a complete C language library for beginners and experts alike.

Positronic Software, distributed by Megabyte Computers, 109 W. Bay Area, Webster, TX 77598. (800) 255-5786.

## DATA EAST TRIO

Here are more arrivals from Data East, the people who brought you Platoon and Speed Buggy:

You'll pilot your jet fighter to battle against enemies based on land, sea and in the air as you soar into the third dimension in **Lock-On**. In **Ikari Warriors**, you and a partner engage in guerilla warfare in jungles, rivers and ruins. And finally, **Karnov**, the fire-breathing Russian, must fight his way past a plethora of strange monsters as he seeks the lost treasure of Babylon.

$39.95 each, color monitor required. Data East USA Inc., 470 Needles Drive, San Jose, CA 95112. (408) 286-7074.

## THUNDER MASTER

The world is on the brink of disaster. War and conflict devastate humanity and you must restore order before the Earth is destroyed by a full-scale nuclear war. Toward that end, you've been trained to operate the ultimate fighting machine—the **Thunder Master** death car.

Test your skills in three levels of six conflicts ranging from guerillas to global war. The Thunder Master is equipped with a V-16 triple-turbo engine and tetra-nuclear propulsion missiles. A second player can activate the Thunder Cloud magnetic levitation unit and provide sandwiches.

$39.95. Titus, 20432 Corsico Street, Chatsworth, CA 91311. (818) 709-3693.

## THIS IS RED FOUR

An Atari coin-op hit has returned to its roots. In Broderbund's **Star Wars** ($39.95), you'll take the part of Luke Skywalker as you pilot an X-Wing fighter through the trench in your quest to destroy the Empire's Death Star.

In **Downhill Challenge** ($29.95), a 3-D interactive ski racing simulation, you'll choose from downhill, slalom, giant slalom and jumping events, each of which has separate runs for beginners, intermediate and advanced skiers.

Color. Broderbund Software, 17 Paul Drive, San Rafael 94903-2101. (415) 392-3200.

## NOT A PENNY MORE

Adapted from Jeffrey Archer's bestselling book, **Not a Penny More, Not a Penny Less** is now an interactive text software adventure in which you, Stephen Bradley, lead a team attempting to recover $1 million from a swindler. You'll breeze through Monte Carlo, London, Ascot, Wimbledon and Oxford as you track down the loot.

$39.95, color. Simon and Schuster, Western Plaza, New York, NY 10023. (212) 373-8882.

*New ST product notices are compiled from information provided by the products' manufacturers.* ***Antic*** *assumes no responsibility for the accuracy of these notices or the performance of the product.*

**DISK BONUS**

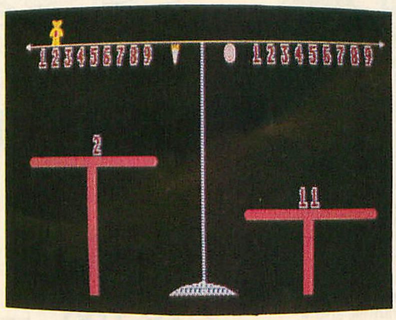
# Teddy Bear Math

## Bouncing Bruin Teaches Addition

### By Stephen Everman & Paul Pratt

A cute, bouncy Teddy Bear does a fine job of teaching younger children how to add, in this month's special ST Disk Bonus. Teddy Bear Math was written in GFA BASIC and runs in medium resolution only, requiring a color monitor.

Teddy Bear Math is the *fifth* Pratt and Everman ST game published in this magazine just since March 1988. It showcases the prolific team's smooth, colorful, professional-quality game creation. When the flashy title screen gives way to the main playing screen, you'll see two scales—each scale "weighing" a number. Two sets of numbers from 0 to 9 are at the top of the screeen, a complete set above each scale.



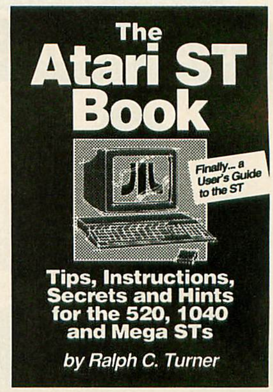

With a joystick or the [ARROW] keys, move Teddy until he's standing over a number. Then push the stick down (backwards), or press the [DOWN-ARROW] key. Teddy will jump up and down on your chosen number until he dislodges it for a graceful descent onto the scale.

If the sum of the numbers on both scales are equal, then the scales balance and Teddy will leap for joy. If not, then you'll have to try again. And if there's too much of a difference between the scales, you'll "tilt."

The object of Teddy Bear Math is to come up with the right answer in as few moves as possible. The program calculates how many numbers are required for balancing the scales in the fewest additional turns. When the child gets the right answer, game difficulty is automatically increased. After a wrong answer, the game automatically picks easier numbers. That's how Teddy Bear Math continually stays within the difficulty range of each individual child.

There are *two* versions of this ST bonus on the Antic Monthly Disk. You can use TEDMATH.PRG even if you don't own the GFA BASIC programming language. Or for the original GFA BASIC source code, run TEDMATH.BAS. For instructions on how to transfer Teddy Bear Math to an ST disk, read the Linkline HELP file on Side B of the Antic Monthly Disk. Select main menu choice 5 to get to the HELP menu. ▲

# ST ATARI BOOK




*Reviewed By GREGG PEARLMAN*

Ralph Turner's **Atari ST Book** isn't just a rehash of the ST owner's manual. It's an informative, understandable, often interesting collection of "tips, instructions, secrets and hints for the 520, 1040 and Mega STs." Best of all, it's mostly for the *user*, not the programmer—although the programmer might learn a thing or two as well.

The 159-page book appears to have been desktop-published, and in some places the proofreaders didn't do their job. But for the most part, The Atari ST Book is useful, although the $16.95 price might rub you the wrong way.

The 17 chapters cover subjects including RAMdisks, file management, the DESKTOP.INF file and the control panel, cold and warm boots, public domain software, word processors and chess. Someone new to the ST world could find this book invaluable, and it wouldn't hurt an expert user to keep a copy lying around. ▲

$16.95. Index Legalis, P.O. Box 1822-7, Fairfield, IA 52556. (515) 472-2293.

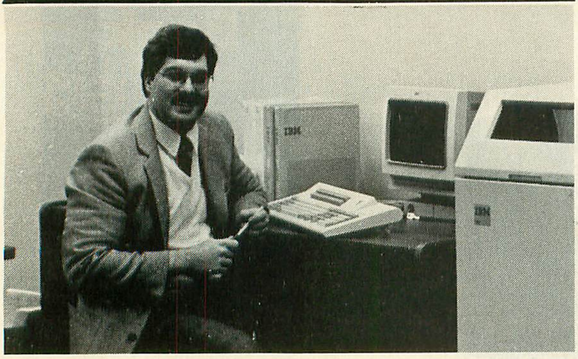
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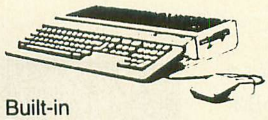
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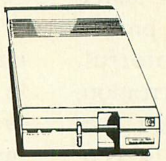


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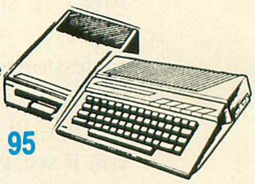


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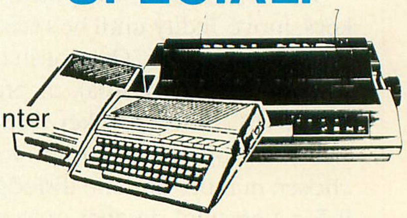
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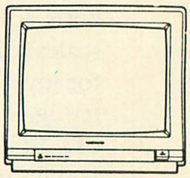


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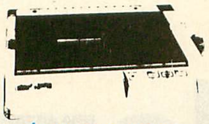
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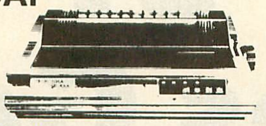


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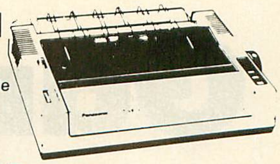


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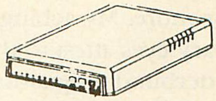
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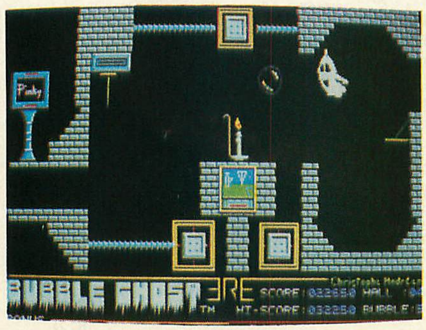
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# ST Games Gallery

*Typhoon Thompson, Bubble Ghost, Speed Buggy, and more.*



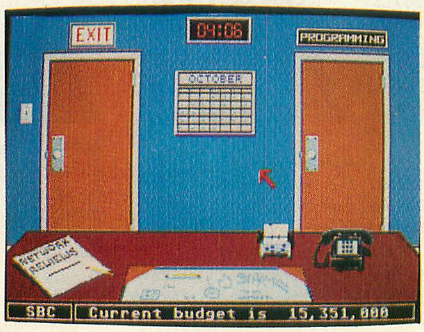

*Typhoon Thompson*




*Bubble Ghost*




*Road Runner*




*Prime Time*

## TYPHOON THOMPSON

Occasionally, a game comes along that has it all—graphics, animation, sound, playability and that certain addictiveness that keeps you coming back for more. My aching shoulders and bleary eyes attest to the fact that the Broderbund programmers famed for Choplifter have done their job well, with the new **Typhoon Thompson.**

It had seemed that Broderbund wasn't going to enter the ST market, which made me sad. But if **Typhoon Thompson** is a sample of what to expect from this publisher, then I'll say, "Take all the time you need, Broderbund." It's that good.

Here's the story: a spacecraft has been lost in the far reaches of the galaxy. At first, it was thought that all aboard were lost, but a faint signal indicates that an infant survived the crash. Several rescue teams headed for the planet where the ship crashed. But they were never heard from again. Thus, it has fallen on your shoulders to rescue the infant, known as the "sea child" because it is being imprisoned by sea sprites on a planet which is virtually all ocean.

As the game begins, your alter ego, Typhoon Thompson, is literally "dropped off" near the crash site. This opening sequence should not be missed—it gives a taste of what's to come. To get around on the watery planet, Typhoon uses a sled that looks like a tire with rocket engines. The left mouse button activates the weapons, while the right button increases the sled's speed by firing the jets.

The sled can even submerge to avoid enemies. Some weapons require both buttons, but learning to fly the sled is not difficult. Typhoon isn't armed, but after he meets the friendly spirits of the planet, they give him a laser cannon. After each level, the spirits provide more powerful weapons, which will be needed as the action intensifies.

The spirits need four Earthly relics before they'll free the baby. At the beginning of each level, you'll be told which object to retrieve. Then you use your direction finder to locate the sea sprite village. Each village consists of a central cylinder surrounded by small islands, each of which houses several sprites—and warlike sprites they are, too. As you approach the islands, the

sprites sally forth to do battle. They are equipped with awesome weapons, including a variety of ships which will attempt to shoot you down.

There are two ways to lose this game. First, you can run out of lives. Many enemy ships have weapons that will vaporize poor Typhoon. The most horrible is probably the bubbles, which envelop him, let him struggle for a while, when dissolve him.

The other way is to run out of sleds. Some enemy ships will puncture or suck up the sled, dumping poor Typhoon in the water. He must then swim back to the spirits to get another sled—if there are any more. Making it even tougher to survive are some particularly diabolical enemies which emanate force fields, making it very hard to control the sled.

When battling the sea sprites, your objective is to shoot down the ships. This dumps the stunned sea sprites in the water, where you can swoop down and pick them up. Wait too long, and the sprite recovers and starts swimming away like a hyperactive seal—the graphics effects must be seen to be believed.

You can't grab a sprite when it's swimming. You must either give up or stun it again with your laser cannon. If the sprite makes it back to the island, it's safe, and will soon return in another ship. In the upper levels, it gets far more difficult to retrieve the sprites because you'll be attacked from all sides. Careful strategy then comes into play, as there are ways to limit the number of sprite ships that pursue you.

Once you capture all the sprites in a village, the distraught sprite king will appear, and you can trade his captured subjects for the object you require. Then you return to the spirits to get more powerful weapons, such as flash bombs, sprite magnets and freeze bombs, before moving on to the next level.

There is so much I like about this game. The graphics are incredible, with the smallest detail painstakingly rendered. From the multiple opening sequences to the horror on the sprite king's face when Typhoon holds up the wiggling bag of his subjects—the king's eyes actually bug out—this game is a graphic marvel. Of course, great graphics don't make a game, but they sure help.

Typhoon Thompson is among the most playable games I ever encountered. By the fourth game, I could survive for 20 to 30 minutes and achieve good scores. This is encouraging and keeps you coming back for more. I wish there was a "Save Game" feature, because a good game can last quite a while. High scores are saved to disk, although you can remove the scores from disk if you want. Finally, you can *win* this game. I haven't done it yet, but I've come very close, and probably by the time you read this, I will have managed it, because I am not giving up.

**Typhoon Thompson is among the most playable games I ever encountered.**

Lastly, to any pirates out there, this game is *good*. It is certainly worth buying. It's also the first major ST game effort by Broderbund and if you steal it, it may well be their last. Don't spoil things for the rest of the ST community by being a jerk and putting this game on your pirate board.—DAVID PLOTKIN

$34.95, color. Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. (415) 492-3500.

## BUBBLE GHOST

**Bubble Ghost** is an amusing and addictive strategy/arcade game featuring excellent graphics and sound, along with an admirably original and non-violent storyline. This French import is a delight to play because it's so full of surprises. You control a ghost who is doomed to wander the halls of a 35-room mansion forever—unless he can successfully move a bubble through all the rooms. Each room is loaded with obstacles and some very tight passages. The bubble pops if it touches anything, and the ghost gets *angry*—one of the better effects in the game.

The ghost can be rotated clockwise with the left mouse button and counter-clockwise with the right button. To move the bubble, you press the [SHIFT] key to make the ghost blow on it. The closer your ghost is to the bubble, the harder he blows the bubble. Also, the direction in which the ghost is facing affects the direction the bubble will be blown. Duration of the airflow is also important.

You begin with five bubbles, periodically gaining extra bubbles for various successes along the way. The obstacles include candles, needles, knives and scissors, as well as some unidentifiable (but still deadly) bubble-poppers. It takes ingenuity and critical timing to get the bubble past obstacles, and even seasoned arcade gamers will be challenged by this little gem. Each room has a timer, and you get bonus points for getting through the room before time runs out.

The hidden surprises in each room can be quite useful in your ghost's quest for eternal peace. One example is a candle, which pops the bubble whenever it passes overhead. Not surprisingly, your ghost can blow out the candle.

The graphics are quite good, and the bubble itself is excellent. It shows highlights from the light and "wobbles" through the air just like a real

bubble. The sounds of the breath and of a popping bubble (which you will hear all too often) are also realistic.

I highly recommend Bubble Ghost. It's imaginative and fun, sometimes letting you compensate for faulty strategy with fast reflexes. But if you're careful and think it through, you can negotiate the rooms of the mansion with your bubble successfully—without once needing the reflexes of a teenager. —DAVID PLOTKIN

$34.95, color. Accolade, 550 S. Winchester Boulevard, Suite 200, San Jose, CA 95128. (408) 296-8400.

## ROAD RUNNER

The main difference between the Road Runner cartoons and Mindscape's unusually fun **Road Runner** game is that in the cartoons, Wile E. Coyote never eats the Road Runner—only the big one. Though the game format doesn't break any new ground, Road Runner is a graphic masterpiece. For example, as in the cartoons, when Wile E. Coyote falls from a high place you can almost hear him sigh as he accepts the fact that it's going to be a long, unpleasant ride down. The little "HELP" sign really adds to his futility.

Perhaps unwisely, Mindscape decided to have the player control the Road Runner. You must dodge Wile E. while inducing him to blow himself up with his arsenal of Acme toys, fall from a plateau, or somehow run in front of a truck or boulder. Along the way, you must grab all the birdseed you find and in the higher levels, every glass of lemonade. There are mines and other perils to avoid—and even without these hazards, the game would be difficult enough because the roads veer crazily and you can see only a small section at a time.

For the most part, you just have to move the stick—in all directions at once, it seems—and press the trigger to jump. Oddly, the Road Runner never says, "Meep meep." Mindscape should have digitized that sound effect and at least played it at the title screen. The documentation is extremely scanty, but all you really need to know is, "If he catches you, you're through." Road Runner has four basic screens, featuring colorful, multilevel scrolling backgrounds full of the kinds of things you'd expect. Starting at level 5, the scene returns to the level 1 screen, but with more hazards. The action is accompanied by the kind of fast classical music you'd expect in Road Runner cartoons.

One strange thing is that when the coyote catches the Road Runner, he drags him back past the right edge of the screen. So if you're careless, you could wind up further back than your last starting point. However, the game doesn't drag you all the way back to the beginning after you run out of lives. If you got past level 1 and if you manage to reach the Short Cut tunnel in the first screen after restarting (it's pretty easy), you'll pick up where you left off.

**In the cartoons, the coyote never wins; in the game, he never loses.**

Each level has two or more sets of hazards. One tough hazard is the cannons in level 3. After you get hit by a cannonball (and you will, you will), sometimes Wile E. Coyote will deposit you directly in front of a cannon which fires as soon as you move—and your charred carcass will be carried further back. Also, you can still be hit even when the cannonballs seem to miss you by miles.

The battered wooden bridge is also lots of trouble. You can't really tell where you are, so seemingly logical moves tend to send you plummeting.

Is there a joystick made that can stand up to the lightning-fast stick movements required continuously in Road Runner? In reviewing this game I destroyed at least two joysticks. And due to my habit of maintaining a death-grip on the stick, I acquired unbelievable cramps in my hands and arms that lasted for days.

As Warner Bros. cartoon fans know, the coyote never wins. In the computer game he never loses. Wouldn't it make more sense to have the player take on the role of Wile E. Coyote, with all the built-in frustrations blocking the ultimate goal of catching the Road Runner? Put some weapons at his disposal. Perhaps have a mail-order screen before each level so he can send away for the latest weaponry from Acme. Throw in birdseed for Road Runner bait. Maybe there should be a Road Runner II.

If you can get past joystick-related hand cramps and occasionally deceiving graphics, Road Runner should keep you entertained for hours on end. It's just about the most challenging chase game you'll ever see.— GREGG PEARLMAN

$49.95, color. Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062. (800) 221-9884; in Illinois, (312) 480-7667.

## INTERNATIONAL SOCCER

Soccer fans everywhere should enjoy **International Soccer**, especially its stunning, fluid animation. If the players were choppy and halting in their movements, it would take away from the realistic beauty of the sport.

With this joystick-driven game you can play against a human foe or the computer. You can also choose from

about 100 colors for either team's uniforms. But make sure you can tell the two teams apart, because the program has no built-in safeguards for this.

You can also set the length of the game; wet, dry, or windy weather conditions, day or night. Probably the most difficult part in the first options screen is deciding on the formation. Experimentation is the only answer for players not too familiar with soccer. But otherwise, you'll have no trouble enjoying a good game of soccer, though it's unlikely you'll beat the computer the first time out.

Before the game starts, use the number keys [1]-[9] to set the difficulty of the computer opponent. The program controls the game, acting as a referee to set up throw-ins, corner kicks and goal kicks when needed.

Push the joystick button to kick the ball. How long the button is depressed determines whether the result will be a pass, chip or long shot—for which the joystick must be centered. If the stick is off-center, the player will attempt a tackle of an opponent that has the ball.

You control only one player with the stick and the computer runs the rest of the team. When the player you're controlling doesn't have the ball, you can control a different player by just pressing the joystick button. When the goalie comes into view, you can activate him by pushing the stick toward the goal and then either left or right, depending on the direction in which you want him to dive.

Now to the game's problems. First, the documentation is sparse, ambiguous and devoid of helpful illustrations. Second, there's incessant music and while I could choose which of four songs to play, I couldn't find a way to turn the music off completely.You also need $10 to buy a backup of this copy-protected disk. Because of the size of the players and the fact that the screen scrolls side-to-side, but not top-to-bottom, this game feels more like Major Indoor Soccer League soccer than the outdoor international variety. There is no feel of the true width of a soccer field.—RICK TEVERBAUGH

$39.95, color. Microdeal (MichTron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

## GOLDRUNNER II

Scrolling arcade shoot-em-ups are among the oldest forms of computer entertainment software. There are only two things that can make a new entry stand out from the crowd and **Goldrunner II** has them both.

One factor is flawless execution. After playing this game for several hours for review purposes (Try telling *that* to my wife when the hedges need trimming), I really can't find fault with the play interface. The graphics are outstanding, and the music lends a certain atmosphere to the game without driving everybody up the wall.

**Enemy fire won't destroy you; it sends you off in a different direction—fast.**

Your goal is to pilot a ship, single-handedly destroy enemy vessels, and recover your captured robot ships. There are many different kinds of enemy ships and this is where the game's solid graphics are especially valuable. At a glance you can tell the differences in the vessels. Sometimes the distinction is made through colors, sometimes by shape and design. One rescue craft is a certain color when empty, but a different color when carrying a robot ship. Shooting it down when empty is almost useless. But shooting it when it's carrying a robot and then capturing the robot before it falls to the ground is really what the game is about.

The second factor in making a standout scrolling arcade game is giving it a twist. Here, the twist is that enemy fire doesn't destroy your ship. Rather, it sends your vessel off in a different direction—at high speed.

You lose ships by crashing into structures too high to fly over. These structures can be identified with the Local Area Scanner, which also serves to locate enemy ships. Other onscreen displays include the number of ships left, the number of robots on board (dump those off in the landing area at each opportunity), the score for the current platform and the overall score for each platform completed.

The only problem with this entire package is something that Microdeal's documentation isn't worth the paper it's printed on. The manual has only 14 pages and one illustration. It's vague and poorly laid out. There's a nice on-disk demo display of the alien ships, their value and when they should be shot down. But that doesn't help if you need a quick reference in the heat of battle. There's a tutorial key that provides vocal tips throughout the beginning levels. It's almost as if the programmers knew the documentation would be worthless when they put the game together.

The game can be played with joystick, mouse or keyboard, though I found the joystick to be the most natural choice. The function keys can be used to turn on or off the tutorial messages and music, and they simplify the game somewhat.

Goldrunner II is a worthwhile addition to the library of any gamer who yearns for something different for his arcade tastes. If you can survive all the screens that come with the original game, you can buy two additional

scenery disks for $12.95 that are even more stunning than the originals.—RICK TEVERBAUGH

$39.95, color. Microdeal (MichTron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

## PRIME TIME

**Prime Time** is a good concept—you're a network programmer trying to schedule a season's worth of inane television programs like "Wheel of Torture." The season lasts from September through July (barring writers' strikes), in this one-player to three-player game. Keeping your job depends on your network's ratings and, more importantly, the amount of money you rake in—each ratings point represents huge sums of money.

Each prospective show has a genre (comedy, drama, etc.), a target audience broken down by age and sex, and ratings for sex and violence content. After establishing your network name, you're given program listings including blurbs, which you can print—helpful if you create a terrific show and want the details for future sessions.

Next comes the front page of Variety, with headlines that might provide information about your ratings, hot or cold show formats, and the health of comedian Bob Gelg, host of several comedy specials—if you bought one of his shows and he dies, you'll have to eat the cost. Finally, you'll see the programs ranked in reverse order, which you can also print, as well as the networks' overall ratings.

The highest-rated network during the previous month juggles its schedule first. Each computer-run network is headed by Fred Silverfish, a Michael Nesmith lookalike who tells you what shows his network has bought, cancelled, pushed (advertised heavily), unpushed, etc. The best way to get in touch with the other Freds is to "do lunch."

You must juggle your office schedule. A clock counts down from five minutes—if you take too long, each extra second costs thousands of dollars. Your rolodex has the names of five studios to call when you want to buy or develop a show. Your Network Review folder includes the Show Board, which displays the programming schedules, ratings and rankings for all three networks' shows. (This would be much more useful if you could make a printout.)

**Your job depends on your ratings —and how much money you rake in.**

There are two doors, marked "Programming" and "Exit." The programming room has shelves for each night, representing the time between 8 and 11 p.m., which hold film cans with the names of your programs. The wider the can, the longer the show. At the top is the "Shelf" shelf, for "shelving" (temporarily halting production) of up to five programs. To cancel a show, drop it in the can—which has a triangular top and a swinging gate to put trash through. The sound effect is excellent.

Perhaps you'll want to push a new show, one that's sagging in the ratings, or even your entire Thursday night lineup. Clicking on Push brings up a list of your shows. Left-click to push or unpush a show, and right-click for rating, ranking and type.

From your office you can phone a studio and buy a program (and schedule it right away) or develop your own— which takes time, but the results can be satisfying. I derived great satisfaction from the rapid upward progress of my brainchildren, "Leave it to President Cleaver" where The Beav grows up, becomes President and accidentally blows up Kuala Lumpur, and "Nipples!", a drama about life in an infant bottle factory.

After you exit the office, it's time to bid on specials, such as Bob Gelg's shows and the World Series, which can add significantly to your overall ratings. Each season has 15 specials, and your budget dictates your spending limit. The overall bidding process is slow, but the graphics are terrific.

Interesting effects in Prime Time include the scrolling credits on the title screen and, especially, the digitized sounds—a blood-curdling scream (courtesy of comedian Sam Kinison) that tells you it's Monday, a receptionist answering the phone at a studio, a cash register, and doors opening and closing. The light switch in your office really does turn the lights on and off. The phone really does ring. And if you want to doodle, that's what your desk blotter is for.

Though Prime Time is addictive, it's not perfect. For instance, what I call the "Different World" factor, sandwiching a weak show between two strong ones, doesn't seem to help the weak show in Prime Time as much as it does in real life. The game and documentation have several misspellings. And twice Prime Time bombed inexplicably.

But this takes nothing away from the overall charm of this challenging game. Its originality, color and humor will keep you busy for hours. And if you can win, the networks probably need your help.—GREGG PEARLMAN

$39.95, color. First Row Software, 900 E. 8th Avenue, Suite 300, King of Prussia, PA 19406. (215) 337-1500.

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# SOFTWARE LIBRARY



**DISK SUBSCRIBERS:** Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

**DOS COMPATIBILITY:** All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

# TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combinations, *hold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [◪] key—or [⅄] on the 400/800—then *release* it before pressing the next key. (Press [◪] or [⅄] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [◩].

**NORMAL VIDEO**

| FOR THIS | TYPE THIS | FOR THIS | TYPE THIS |
|---|---|---|---|
| | CTRL , | | CTRL S |
| | CTRL A | | CTRL T |
| | CTRL B | | CTRL U |
| | CTRL C | | CTRL V |
| | CTRL D | | CTRL W |
| | CTRL E | | CTRL X |
| | CTRL F | | CTRL Y |
| | CTRL G | | CTRL Z |
| | CTRL H | | ESC ESC |
| | CTRL I | | ESC CTRL − |
| | CTRL J | | ESC CTRL = |
| | CTRL K | | ESC CTRL + |
| | CTRL L | | ESC CTRL * |
| | CTRL M | | CTRL . |
| | CTRL N | | CTRL ; |
| | CTRL O | | SHIFT = |
| | CTRL P | | ESC SHIFT CLEAR |
| | CTRL Q | | ESC DELETE |
| | CTRL R | | ESC TAB |

**INVERSE VIDEO**

| FOR THIS | TYPE THIS |
|---|---|
| | ESC SHIFT DELETE |
| | ESC SHIFT INSERT |
| | ESC CTRL TAB |
| | ESC SHIFT TAB |
| | ⅄ CTRL . |
| | ⅄ CTRL ; |
| | ⅄ SHIFT = |
| | ESC CTRL 2 |
| | ESC CTRL DELETE |
| | ESC CTRL INSERT |

# TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads **Antic**'s type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [*], then the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:? "TYPO II"
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1:? "TYPO II"
   :POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VU 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press RETURN and edit line a
   bove.":GOTO 32050
```

# FLOWER GARDEN

*Article on page 40*

## LISTING 1

Don't type the TYPO II Codes!

```
BR 10 REM THE FLOWER PROGRAM
NV 20 REM BY ALLAN MOOSE AND MARIAN LOREN
   Z
QH 30 REM (c)1988, ANTIC PUBLISHING
LI 50 DIM GRAPH$(200),FN$(16)
QJ 60 ? "  PLEASE WAIT..."
RO 80 GOSUB 720
XH 100 REM INPUT & INITIALIZATION
HC 120 ? "}  Enter N ":INPUT N
FJ 130 IF N=0 THEN ? "Must Be Non-Zero}}}
   ":GOTO 120
CM 140 ?
TY 150 ? " Enter the incremental angle, A
   LPHA ":INPUT ALPHA
BU 170 COUNT=0:DELTA=0:DELTAINC=2
JR 180 COUNTSTOP=180:ASPECT=320/192
PA 200 REM THE MAIN PROGRAM
EP 210 GRAPHICS 24:POKE 710,12:POKE 712,1
   2:POKE 709,2:COLOR 1:DEG
IP 220 THETA=DELTA
UQ 230 R=80*SIN(N*THETA)
QC 240 OLDX=R*COS(THETA):OLDY=R*SIN(THETA
   )
PO 250 THETA=THETA+ALPHA
YW 260 IF THETA>=360 THEN GOSUB 450
LJ 270 NTHETA=THETA*N
SV 280 GOSUB 500
GX 290 R=80*SIN(NTHETA)
BQ 300 XNEW=R*COS(THETA):YNEW=R*SIN(THETA
   )
DF 310 PLOT ASPECT*OLDX+160,90-OLDY
QA 320 DRAWTO ASPECT*XNEW+160,90-YNEW
NE 330 COUNT=COUNT+1
YR 340 IF THETA=DELTA THEN 370
SZ 350 OLDX=XNEW:OLDY=YNEW
OH 360 GOTO 250
EJ 370 IF COUNT>=COUNTSTOP THEN 550
XI 380 DELTA=DELTA+DELTAINC
NG 390 GOTO 220
XV 400 REM THE SUBROUTINES
KM 410 REM MOD FUNCTION FOR THETA
YC 450 THETA=THETA-(INT(THETA/360))*360
ZM 460 RETURN
ZK 480 REM MOD FUNCTION FOR NTHETA
OV 500 NTHETA=NTHETA-(INT(NTHETA/360))*36
   0:RETURN
YE 530 REM THE SCREEN DUMP
QW 550 GOSUB 1000
KH 555 IF KEYP=35 THEN GRAPHICS 0:GOTO 12
   0
DF 556 IF KEYP=10 THEN 560
PH 557 GOTO 800
ZA 560 GRAPH$(1)=CHR$(0):GRAPH$(200)=CHR$
   (0):GRAPH$(2)=GRAPH$
MH 570 LPRINT CHR$(27);CHR$(65);CHR$(8)
HD 580 SCRNMEM=PEEK(88)+PEEK(89)*256
WR 590 MEMORY=SCRNMEM+40*191
CQ 600 HIBYTE=INT(ADR(GRAPH$)/256)
TB 610 LOBYTE=ADR(GRAPH$)-HIBYTE*256
EI 620 POKE 203,LOBYTE:POKE 204,HIBYTE
QY 630 FOR COLUMN=MEMORY TO MEMORY+39
MB 640 DUMP=USR(1536,COLUMN)
NA 650 LPRINT CHR$(27);CHR$(75);CHR$(200)
   ;CHR$(0);GRAPH$
TM 660 NEXT COLUMN
PQ 670 GOTO 550
LK 690 REM M/L SCREEN DUMP ROUTINE
XL 720 RESTORE 760
UZ 730 FOR K=0 TO 43
SK 740 READ ML:POKE 1536+K,ML
HB 750 NEXT K
HQ 760 DATA 104,104,141,15,6,104,141,14,6
   ,160,4,162,192,173,0,0,202,240,24
GU 770 DATA 145,203,200,216,173,14,6,56,2
   33,40,141,14,6
UO 780 DATA 144,3,76,13,6,206,15,6,76,13,
   6,96
ZV 790 RETURN
UR 800 IO=848:CLOSE #1:OPEN #1,8,0,"D:PIC
   TURE":POKE IO+2,11:POKE IO+4,PEEK(88):
   POKE IO+5,PEEK(89)
KZ 810 POKE IO+8,0:POKE IO+9,30:JNK=USR(A
   DR("hhh*LVd"),16)
ZL 820 PUT #1,PEEK(712):FOR X=708 TO 710:
   PUT #1,PEEK(X):NEXT X:CLOSE #1:GOTO 55
   0
BO 1000 GRAPHICS 8+32:POKE 710,12:POKE 71
   2,12:POKE 709,2:POKE 752,1
LU 1010 ? "}     Save      Print       New im
   age"
FX 1020 POKE 764,255
KO 1030 KEYP=PEEK(764):IF  NOT (KEYP=10 O
   R KEYP=62 OR KEYP=35) THEN 1030
GD 1040 POKE 764,255
OF 1050 GRAPHICS 8+16+32:POKE 710,12:POKE
    712,12:POKE 709,2:RETURN
```

# DIMENSION WIZARDS

*Article on page 14*

## LISTING 1

Don't type the TYPO II Codes!

```
WA 1 REM DIMENSION WIZARDS
OQ 2 REM BY BERNARD COZIER
QR 3 REM (c)1988, ANTIC PUBLISHING
EY 5 GOSUB 4000:GOSUB 10000:GOSUB 6000:GO
   SUB 2000:GOSUB 3000:GOSUB 7000:GOSUB 5
   000:GOSUB 8000:GOSUB 1000
PS 10 POKE 53278,0:P0$=SH$(PEEK(1547+PEEK
   (1562))):P1$=SH$(PEEK(1547+PEEK(1563))
   ):I=USR(ADR(ML$)):POKE 53278,0
AB 20 IF PEEK(TW+33)+PEEK(TW+34)=32 OR PE
   EK(TW+113)+PEEK(TW+114)=32 THEN 520
GL 500 I=USR(ADR(ML$)):IF PEEK(A)<>16 AND
    PEEK(B)<>16 THEN 10
CB 510 GOSUB 1000:GOTO 10
ZM 520 GOSUB 9000:GOSUB 8000:GOSUB 1000:G
   OTO 10
QW 530 REM
XH 1000 REM TRANSPORT TO NEW BATTLEFIELD
OT 1005 DMNS=DMNS+1:IF DMNS>20 THEN POP :
   GOTO 520
NV 1010 POKE 559,0:SOUND 2,0,0,0:SOUND 3,
   0,0,0:SOUND 0,25,10,15:SOUND 1,50,10,1
   5
AQ 1020 GOSUB 10500:NP=INT(RND(0)*6)+4:GO
   TO 1050
LF 1030 L=SC+RND(0)*19+RND(0)*380:IF PEEK
   (L)<>0 THEN 1030
AL 1040 RETURN
EU 1050 P0$=BL$:P1$=BL$:FOR I=1 TO NP:GOS
   UB 1030:POKE L,131:GOSUB 1030:POKE L,6
   7:NEXT I:POKE A,NP+16:POKE B,NP+16
SH 1060 FOR I=1 TO RND(0)*6+4:GOSUB 1030:
   POKE L,1:GOSUB 1030:POKE L,2:NEXT I
KQ 1070 FOR I=1 TO RND(0)*3+2:GOSUB 1030:
   POKE L,197:GOSUB 1030:POKE L,198:NEXT
   I
PK 1080 FOR I=1 TO RND(0)*3+2:GOSUB 1030:
   POKE L,132:NEXT I:FOR I=1 TO RND(0)*3+
   1:GOSUB 1030:POKE L,68:NEXT I
BC 1090 POKE 559,62:POKE 53277,3:GOSUB 11
   00:GOTO 1130
RX 1100 POKE 53278,0:FOR I=0 TO 1:GOSUB 1
   150:POKE X+I,N:GOSUB 1160:POKE Y+I,N:N
   EXT I:N1=INT(RND(0)*4)
IY 1110 P0$=SH$(N1*20+1):N2=INT(RND(0)*4)
   :P1$=SH$(N2*20+1):POKE 1562,7*(N1=0)+1
   1*(N1=1)+14*(N1=2)+13*(N1=3)
NJ 1120 POKE 1563,7*(N2=0)+11*(N2=1)+14*(
   N2=2)+13*(N2=3):RETURN
NK 1130 N=PEEK(53252)+PEEK(53253)+PEEK(53
   260):IF N<>0 THEN P0$=BL$:P1$=BL$:GOSU
   B 1100:FOR I=1 TO 10:NEXT I:GOTO 1130
OD 1140 SOUND 0,0,0,0:SOUND 1,0,0,0:RETUR
   N
```

*continued on next page*

```
PP 1150 N=RND(0)*154+48:RETURN
NO 1160 N=RND(0)*144+46:RETURN
IT 1170 REM
RQ 2000 REM VBI FOR MOVING PLAYERS
MF 2001 DIM APM$(313)
YG 2002 APM$(1,78)="[illegible]"
QB 2003 APM$(79,156)="[illegible]"
FI 2004 APM$(157,234)="[illegible]"
HK 2005 APM$(235,313)="[illegible]"
OB 2006 APM$(136,136)=CHR$(34)
CP 2150 OFF=512+(PEEK(559)=62)*512
HZ 2160 OFFSET=128+(PEEK(559)=62)*128
AI 2170 FOR I=0 TO 3:N=PMBASE+OFF+OFFSET*I:GOSUB 2180:POKE 1774+I,LSB:POKE 1778+I,MSB:NEXT I:GOTO 2190
XW 2180 MSB=INT(N/256):LSB=N-256*MSB:RETURN
EM 2190 X=1734:Y=1738:DX=1742:DY=1746:XMIN=1754:XMAX=1758:YMIN=1762:YMAX=1766:IMAGELSB=1782:IMAGEMSB=1786
IZ 2200 LENGTH=1750:PLAYER=1770:STIK=1726:PORT=1730:WIDTH=53256:COLOUR=704:POKE 1714,76:POKE 1715,156
CN 2210 FOR I=0 TO 3:POKE PLAYER+I,255:POKE STIK+I,0:POKE DX+I,1:POKE DY+I,1:NEXT I:RETURN
IH 2220 REM
KX 3000 REM CUSTOMIZE GRAPHICS MODE
DT 3005 GRAPHICS 1:POKE 16,64:POKE 53774,64:POKE 712,132:POKE 559,0
FC 3010 POKE 756,CH/256:DL=PEEK(560)+256*PEEK(561):SL=PEEK(DL+4):SH=PEEK(DL+5):TL=PEEK(DL+26):POKE 752,1
HR 3020 TH=PEEK(DL+27):POKE DL+3,66:POKE DL+4,TL:POKE DL+5,TH:POKE DL+6,2:POKE DL+7,70:POKE DL+8,SL:POKE DL+9,SH
MM 3030 FOR I=DL+10 TO DL+27:POKE I,6:NEXT I:POKE DL+29,66:TL=TL+80:TH=TH+(TL>255):TL=TL-256*(TL>255):POKE DL+28,134
KO 3040 POKE DL+30,TL:POKE DL+31,TH:POKE DL+32,2:POKE DL+33,65:POKE DL+34,PEEK(560):POKE DL+35,PEEK(561):POKE 82,0
YY 3050 DIM B$(20):B$=CHR$(32):B$(20)=CHR$(32):B$(2)=B$:POKE 708,40:POKE 709,12:POKE 710,2:POKE 711,54
GQ 3060 RESTORE 3000:FOR I=1 TO 16:READ CODE:POKE 1535+I,CODE:NEXT I:POKE 512,0:POKE 513,6:POKE 54286,192:? #6;"  "
GQ 3061 POSITION 1,1:? #6;"[illegible]":? #6:? #6:? #6;" [illegible] : score[illegible]":? #6;"      SCORE+15"
QR 3062 ? #6:? #6;" [illegible] : score[illegible]":? #6;"      SCORE+30"
DJ 3063 ? #6:? #6;" [illegible] : score[illegible]":? #6:? #6;" [illegible] : SCORE+15"
XS 3064 ? #6:? #6;" [illegible] : STRENGTH+2":? #6:? #6;" [illegible] : BOLT CHARGE+2"
LY 3070 DATA 72,141,10,212,169,12,141,24
WD 3080 DATA 208,169,2,141,23,208,104,64
AO 3090 POKE 559,62:RETURN
IA 3100 REM
GB 4000 REM REDEFINE CHARACTER SET
GB 4010 CH=PEEK(106)-8:POKE 106,CH:CH=CH*256:POKE 580,1:GRAPHICS 0
IV 4011 MOV=ADR("[illegible]")
AF 4015 I=USR(MOV,57344,CH,1024)
DW 4020 I=ADR("[illegible]")
DD 4030 N=USR(MOV,I,CH+8,80)
RB 4120 POKE CH+86,34:RETURN
BX 5000 REM ML ROUTINES
ZC 5005 I=ADR("[illegible]")
KO 5010 N=USR(MOV,I,1564,92)
II 5400 REM
HF 5410 DIM ML$(999)
FZ 5420 ML$(1,80)="[illegible]"
SI 5430 ML$(81,160)="[illegible]"
NN 5440 ML$(161,240)="[illegible]"
NO 5450 ML$(241,320)="[illegible]"
PI 5460 ML$(321,400)="[illegible]"
LJ 5470 ML$(401,480)="[illegible]"
OH 5480 ML$(481,560)="[illegible]"
GS 5490 ML$(561,640)="[illegible]"
UB 5500 ML$(641,720)="[illegible]"
RC 5510 ML$(721,800)="[illegible]"
PE 5520 ML$(801,880)="[illegible]"
RW 5530 ML$(881,960)="[illegible]"
XK 5540 ML$(961,999)="[illegible]"
KS 5550 ML$(518,518)=CHR$(34)
SR 5560 ML$(859,859)=CHR$(34)
BI 5570 RETURN
CC 6000 REM SET UP PM GRAPHICS
BA 6010 PM=PEEK(106)-16:POKE 106,PM:POKE 54279,PM:POKE 559,62:PMBASE=PM*256:POKE 623,1
WJ 6015 DIM BL$(80):BL$="[illegible]":BL$(80)="[illegible]":BL$(2)=BL$:FOR I=PMBASE+1024 TO PMBASE+2047 STEP 256
OP 6016 N=USR(ADR("[illegible]"),I):NEXT I
OB 6020 DIM P0$(20),P1$(20),P2$(20),P3$(20),SH$(80),BT$(20):P0$=BL$:P1$=BL$:P2$=BL$:P3$=BL$:SH$=BL$:BT$=BL$
SA 6030 DATA 1,1,1,0,21,21,21,0,61,41
XZ 6069 BT$="[illegible]"
KU 6071 SH$="[illegible]"
LN 6072 SH$(37,37)=CHR$(34)
NZ 6080 RESTORE 6030:FOR I=1 TO 10:READ CODE:POKE 1551+I,CODE:NEXT I:RETURN
JC 6090 REM
QC 7000 REM SET UP PLAYERS
ZZ 7010 FOR I=0 TO 3:POKE XMIN+I,48:POKE XMAX+I,201:POKE YMIN+I,46:POKE YMAX+I,191:POKE PLAYER+I,I:POKE LENGTH+I,20
AV 7015 POKE X+I,48:POKE Y+I,46:NEXT I
VU 7020 N=ADR(P0$):GOSUB 2180:POKE IMAGELSB+0,LSB:POKE IMAGEMSB+0,MSB:N=ADR(P1$):GOSUB 2180:POKE IMAGELSB+1,LSB
GU 7030 POKE IMAGEMSB+1,MSB:POKE COLOUR+0,12:POKE COLOUR+1,2:POKE COLOUR+2,12:POKE COLOUR+3,2:N=ADR(P2$):GOSUB 2180
RA 7040 POKE IMAGELSB+2,LSB:POKE IMAGEMSB+2,MSB:N=ADR(P3$):GOSUB 2180:POKE IMAGELSB+3,LSB:POKE IMAGEMSB+3,MSB
MU 7050 P0$=SH$(20):P1$=SH$(20):P2$=BT$:P3$=BT$:FOR I=2 TO 3:POKE DX+I,2:POKE DY+I,2:POKE XMIN+I,28:POKE XMAX+I,222
PA 7055 POKE YMIN+I,5:POKE YMAX+I,235:POKE X+I,28:POKE Y+I,5:POKE STIK+I,1:POKE PORT+I,15:NEXT I:TW=TL+TH*256-80
FA 7057 A=TW+40+18:B=TW+120+18:TL=TL-80:TH=TH-(TL<0):TL=TL+256*(TL<0):POKE 207,TL:POKE 208,TH
DP 7060 I=USR(ADR(APM$)):BT$="[illegible]":RETURN
IX 7070 REM
HK 8000 REM START NEW GAME
OB 8002 DMNS=0:? CHR$(125);
FZ 8004 ? "   PLAYER 1 : PRESS TRIGGER TO BEGIN":? "              TELEPORTATION"
XH 8005 ? "   PLAYER 2 : PRESS TRIGGER TO BEGIN":? "              TELEPORTATION";
CK 8006 IF PEEK(644)<>0 OR PEEK(645)<>0 THEN 8006
GV 8020 POKE 559,0:? CHR$(125);
MQ 8030 ? " ' PLAYER 1: 00000      STRENGTH: 12   ) ( LIVES TO SAVE: 0    BOLT CHARGE: 1 *";
MP 8040 ? " ' PLAYER 2: 00000      STRENGTH: 12   ) ( LIVES TO SAVE: 0    BOLT
```

```
   CHARGE: 1 *";:RETURN
IS 8050 REM
XS 9000 REM GAME OVER
XC 9010 SOUND 2,0,0,0:SOUND 3,0,0,0
DZ 9011 IF PEEK(TW+33)+PEEK(TW+34)<>32 TH
   EN 9016
JG 9012 FOR I=1 TO 20:N=RND(0)*16:P0$(N+3
   ,N+3)=CHR$(PEEK(53770)):SOUND 0,PEEK(5
   3770),8,15:NEXT I
NQ 9016 IF PEEK(TW+113)+PEEK(TW+114)<>32
   THEN 9019
NY 9017 FOR I=1 TO 20:N=RND(0)*16:P1$(N+3
   ,N+3)=CHR$(PEEK(53770)):SOUND 1,PEEK(5
   3770),8,15:NEXT I
IY 9019 SOUND 0,125,10,10:SOUND 1,250,10,
   15:P0$=BL$:P1$=BL$:GOSUB 10500
LD 9020 POSITION 5,1:? #6;"game over":? #
   6:? #6:? #6
WW 9021 S1=0:N=10000:FOR I=13 TO 17:S1=S1
   +(PEEK(TW+I)-16)*N:N=N/10:NEXT I
RI 9022 S2=0:N=10000:FOR I=93 TO 97:S2=S2
   +(PEEK(TW+I)-16)*N:N=N/10:NEXT I
JN 9023 IF PEEK(TW+33)+PEEK(TW+34)=32 THE
   N ? #6;" player one killed":? #6:? #6:
   POKE PLAYER,255
SH 9024 IF PEEK(TW+113)+PEEK(TW+114)=32 T
   HEN ? #6;" PLAYER TWO KILLED":? #6:? #
   6:POKE PLAYER+1,255
JD 9025 IF S1>S2 THEN ? #6;"    player one
    wins":? #6:? #6
OY 9026 IF S1<S2 THEN ? #6;"    PLAYER TWO
    WINS":? #6:? #6
FE 9027 IF S1=S2 THEN ? #6;"     EQUAL SCO
   RES":? #6:? #6
HY 9028 ? #6;"   TELEPORTED <";:DMNS=DMNS
   -(DMNS>20):? #6;DMNS;">"
FZ 9030 POSITION 4,18:? #6;"press start"
AQ 9040 IF PEEK(53279)<>6 THEN 9040
BU 9050 GOSUB 10500:POKE PLAYER+0,0:POKE
   PLAYER+1,1:RETURN
IW 9060 REM
FE 10000 REM INTRODUCTION
DT 10001 GRAPHICS 0:POKE 710,132:POKE 712
   ,132:POKE 752,1:? :GOSUB 4020:POKE 756
   ,CH/256
MY 10005 SOUND 0,125,10,10:SOUND 1,250,10
   ,15:RETURN
RY 10500 SC=PEEK(88)+256*PEEK(89):FOR I=0
    TO 19:POSITION 0,I:? #6;B$:NEXT I:RET
   URN
```

## LISTING 2

```
EZ 10 REM DIMENSION WIZARDS, LISTING 2
XH 20 REM BY BERNARD COZIER
QH 30 REM (c)1988, ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? "COMPLETED
   "
```

```
II 1000 DATA 2054
PN 1010 DATA 050048048050032065080077036O
   400490440550560410610341041652120241O5
   017168165213105000170169007
JG 1020 DATA 076092228216162000189190006Z
   010012400061891200021571940062322240O4
   208238162000189234006201004
ZX 1030 DATA 176091168185194006201005240O
   222010062400182010072400142010092400Z5
   201010240021201011240017208
UC 1040 DATA 030189034155050004804805103Z
   650800770360400550570440490530540410
   034198000602412520600615719
LR 1050 DATA 006221222006144015189198006O
   562532060061571980062212180061442261
   194006201006240026201014240
LR 1060 DATA 022201010240018201005240029Z
   010132400252010092400212080322081581
   093189202006056253210006157
WM 1070 DATA 202006221226006176015189034
   550500480480520320650800770360400490
   055044050051052041061034202
OM 1080 DATA 006024125210006157202006221Z
   300061762261891980061570002081892380
   133203189242006133204189246
JU 1090 DATA 006133205189250006133206188Z
   020061690001412550061520721722550061
   205141254006104168173254006
OK 1100 DATA 145203200238255006173255006Z
   212140062082272320341550500480480530
   065080077036040050051053044
ET 1110 DATA 051049051041061034224004208
   541620001891940062010152400031570260
   189006208041001201000240008
HK 1120 DATA 169028157196006157200006232
   240022082241730122080410082010002400
   169028141197006141201006173
GZ 1130 DATA 013208041004201000240008169
   281411960061412000061690001330770760
   228034155052048049049032077
EA 1140 DATA 079086061065068082040034104
   041332411041332401041332131041332121
   133239104133238160000177240
BE 1150 DATA 145212230212208002230213230
   402080022302411982382082341982390162
   096034041155052048050048032
IK 1160 DATA 073061065068082040034000048
   241180941230630280240241261260240240
   024056056016124016016056108
BR 1170 DATA 000000000136203127187136255
   312311291292312312550160560160842540
   016056064048028058030012024
BU 1180 DATA 028013031060056024072068056
   020120560921200480240561762480600280
   018039028034041155053048048
ZI 1190 DATA 053032073061065068082040034
   322091721840061731820060241132071452
   136173183006113207145207200
VY 1200 DATA 174185006177207201026144014
   562330101452071361772070241050011452
   200136202224000208230164209
PP 1210 DATA 096132209172182006177207056
   330011452071642090961322091721820061
   002024113207145207201026144
WX 1220 DATA 004169025145207164209096034
   411550530520500480320770760360400490
   056048041061034104173196006
EA 1230 DATA 201015144013169000141176006
   410052102051760062400172381760062381
   006173176006141004210169140
JP 1240 DATA 141005210173197006201015144
   131690001411770061410072102051770062
   017238177006238177006173177
VZ 1250 DATA 006141006210169140141007210
   731200022010150341550530520510480320
   076036040056049044049054048
TP 1260 DATA 041061034240012169000141000
   101691361410012102080051691281410012
   173121002201015240012169050
JB 1270 DATA 141002210169136141003210208
   071691281410032101620001891980060562
   048133209070209070209070209
AU 1280 DATA 041002201000240002230209165
   091571860061892020060562330461332090
   155053052052048032077076036
VV 1290 DATA 040049054049044050052048041
   610340702090702090702090410022010002
   002230209165209157188006232
MM 1300 DATA 224002208197162000189200006
   010301440172012191760131892040062010
   144006201232176002144075169
CX 1310 DATA 015157196006169000157176006
   891320022010002080581881780061772071
```

*continued on next page*

```
   180006169017145207189034155
NM 1320 DATA 0530520530480320770760360400
   50052049044051050048041061034240006133
   212189244006133213188204006
CO 1330 DATA 1690001342091701452122002322
   24020208248166209189198006157200006189
   202006157204006189026006157
KN 1340 DATA 1960062322240022081521650880
   24109186006133212165089105000133213174
   188006224000240018165212024
YI 1350 DATA 1050201332121652130341550530
   52054048032077076036040051050049044052
   048048041061034105000133213
TW 1360 DATA 2021972132402341600001772122
   01131208049169200141000210169175141001
   210169132145212169005141182
LH 1370 DATA 0061690011411830061690171411
   84006169004141185006032028006169138141
   182006032082006196209240043
VU 1380 DATA 2010682080431690201410002101
   69175141001210034155053052055048032077
   076036040052048049044052056
JT 1390 DATA 0480410610341690001452121690
   05141182006169001141183006169017141184
   006169004141185006032028006
YU 1400 DATA 1962092400532401542010672080
   51169020141000210169175141001210169000
   145212169000141182006169003
MT 1410 DATA 1411830061690171411840061690
   04141185006032028006169058141182006032
   034155053052056048032077076
UR 1420 DATA 0360400520560490440530540480
   41061034082006196209240073240199201197
   208041169050141000210169175
KW 1430 DATA 1410012101690001452121690021
   41182006169000141183006169032141184006
   169002141185006032028006196
GA 1440 DATA 2092400262011982080221690501
   41000210169175141001210169000145212169
   076141182006032097006192034
OM 1450 DATA 1550530520570480320770760360
   40053054049044054052048041061034020240
   006160020192020240173165088
BG 1460 DATA 0241091870061332121650891050
   00133213174189006224000240018165212024
   105020133212165213105000133
GJ 1470 DATA 2132021972132402341600001772
   12201067208049169200141002210169175141
   003210169068145212169005141
KR 1480 DATA 1820061690011411830060341550
   53053048048032077076036040054052049044
   055050048041061034169097141
AR 1490 DATA 1840061690041411850060320280
   06169058141182006032082006196209240043
   201132208043169020141002210
MP 1500 DATA 1691751410032101690001452121
   69005141182006169001141183006169097141
   184006169004141185006032028
LK 1510 DATA 0061962092400532401542011312
   08049169020141002034155053053049048032
   077076036040055050049044056
GN 1520 DATA 0480480410610342101691751410
   03210169000145212169000141182006169003
   141183006169097141184006169
EE 1530 DATA 0041411850060320280061691381
   41182006032082006196209240073201197208
   043169050141002210169175141
LN 1540 DATA 0032101690001452121690021411
   82006169000141183006169114141184006169
   002034155053053050048032077
XQ 1550 DATA 0760360400560480490440560560
   48041061034141185006032028006196209240
   028240154201198208022169050
HF 1560 DATA 1410022101691751410032101690
   00145212169156141182006032097006192020
   240006160020192020240218173
FN 1570 DATA 0122080410082010002400661600
   32177207205181006176025136177207201016
   208007200145207201016240020
EA 1580 DATA 0341550530530510480320770760
   36040056056049044057054048041061034056
   233001145207200177207024105
PD 1590 DATA 0100562371810060241050161452
   07169000141182006169005141183006169097
   141184006169004141185006032
HK 1600 DATA 0280061730132080410042010002
   40066160114177207205180006176025136177
   207201016208007200145207201
QG 1610 DATA 0162400200562330011452070341
   55053053052048032077076036040057054049
   044057057057041061034200177
PV 1620 DATA 2070241050100562371800060241
   05016145207169000141182006169005141183
   006169017141184006169004141
NN 1630 DATA 1850060320280060960341550540
   48054057032066084036061034000000000000
   00000000102060255060102000
PP 1640 DATA 0000000000000000000000341550
   54048055049032083072036061034000000064
   048028058030012024028013031
UI 1650 DATA 0600560240720680560000000000
   00002012056092120048024056176248060028
   024018039028000000000000016
VU 1660 DATA 0080280420620280080930930620
   280280080400360240000000000000024036040
   008028028062093093008028062
PS 1670 DATA 042028008016000000034155
```

# PERSONAL POCKET CALENDAR

*Article on page 16*

## *LISTING 1*

Don't type the TYPO II Codes!

```
YC 10 REM PERSONAL POCKET CALENDAR
FK 20 REM BY JIM HODNY
ZP 30 REM (c)1988, ANTIC PUBLISHING INC.
IP 100 GRAPHICS 0:POKE 710,0:POKE 752,3:D
   IM MNAME$(13),DATE$(2),STUFF$(30):POKE
    195,0
NI 110 DIM YN$(1),C$(1122),C1$(1122),LINE
   $(34),NAME$(25),APC$(34),MODLINE$(34),
   DATEMAT(42),DT$(100),UNLINE1$(40)
IM 120 LINE$(1,1)="-":LINE$(34)=LINE$:LIN
   E$(2)=LINE$:DT$(1)=" ":DT$(100)=DT$:DT
   $(2)=DT$:CLOSE #3:OPEN #3,4,0,"K:"
IU 130 APC$="  *** Appointments and memos
    ***  ":MODLINE$=" -------------------
   -----------   "
YZ 140 DIM L$(187),INFO$(1088),BL$(34),D$
   (13),Y$(15),MO$(9),RS$(26):UNLINE1$="
                                  ":IN=1
UT 150 DIM M$(15),DY$(24),DAY$(21),BLINE$
   (34):BLINE$="
         ":DAY$="SUNMONTUEWEDTHUFRISAT"
TS 160 BL$(1,1)=" ":BL$(34)=BL$:BL$(2)=BL
   $:INFO$(1,1)=" ":INFO$(1088)=INFO$:INF
   O$(2)=INFO$:OFF=0:CLNDR=OFF:LOD=OFF
QL 170 C$(1)=" ":C$(1122)=C$:C$(2)=C$:C1$
   =C$:D$="D:X":QUIT=OFF:NWCAL=OFF:PRNT=O
   FF
ZT 180 RS$="Press any key to continue"
VX 190 PLACE=35:INFO$(1,34)="    SUN MON T
   UE WED THR FRI SAT "
GH 200 TRAP 210:CLOSE #4:OPEN #4,4,0,"D:N
   AME":INPUT #4;NAME$:CLOSE #4
IT 210 TRAP 40000
CZ 220 IF NAME$=BL$(1,25) OR PEEK(195)=17
   0 THEN ? "Do you want to personalize
   the":? "calendar (Y/N)":GOTO 240
OL 230 GOTO 260
CN 240 GET #3,K:IF CHR$(K)<>"N" AND CHR$(
   K)<>"n" AND CHR$(K)<>"y" AND CHR$(K)<>
   "Y" THEN 240
VX 250 IF CHR$(K)="y" OR CHR$(K)="Y" THEN
    2830
IF 260 REM MAIN MENU
NI 270 POKE 764,255:POKE 702,64:POKE 710,
   147:POKE 752,1:? "":? "    ";NAME$:? "
      Personal pocket calendar"
WV 290 ? :? :? " 1  Create a new calendar
   "
XQ 300 ? " 2  Load a calendar from disk"
XT 310 ? " 3  Enter/edit appointments/mem
   os"
ML 320 ? " 4  Save the present calendar t
   o disk"
QK 330 ? " 5  Print the present calendar"
UT 340 ? " 6  Display present calendar on
    screen";
JG 350 ? " 7  List calendars on this disk
   "
TS 360 ? " 8  End program"
NM 370 ? :? "Make the desired selection--
   >___";
```

```
FJ 380 GET #3,K:IF K<49 OR K>56 THEN 380
LB 390 YN$=CHR$(K):? YN$;:? :? :C=VAL(YN$
   )+1:IF C<>2 AND C<>3 AND C<>9 THEN 450
HQ 400 IF CLNDR=IN THEN RESTORE 2820:FOR
   X=1 TO M:READ MO$:NEXT X:? :? "DO YOU
   WANT TO SAVE YOUR":? MO$;", ";Y;
ML 410 IF CLNDR=IN THEN ? " CALENDAR ( Y/
   N )?";:GET #3,K:IF CHR$(K)="Y" THEN C=
   5:?
YF 420 IF CHR$(K)="Y" AND YN$="9" THEN QU
   IT=OFF
TV 430 IF YN$="2" OR YN$="3" THEN NWCAL=I
   N
DW 440 IF CLNDR=IN THEN ? "↑↑⇧⇧⇧";
YD 450 IF C=2 OR C=3 THEN CLNDR=IN:PRNT=I
   N
UC 460 IF C>3 AND C<8 THEN IF CLNDR=OFF A
   ND PRNT=OFF THEN ? "◘↓↓↓   THERE IS NO
    CALENDAR IN MEMORY..."
HR 470 IF C>3 AND C<8 THEN IF CLNDR=OFF A
   ND PRNT=OFF THEN POSITION 5,23:? RS$;:
   GET #3,K:GOTO 260
RA 480 IF C=2 OR C=3 THEN C$(1,1)=" ":C$(
   1122)=C$:C$(2)=C$:C1$=C$
WG 490 IF C=1 THEN 270
OJ 500 IF C=9 THEN POKE 710,148:END
XF 510 IF C=2 THEN GOSUB 2300:GOTO 260
ZW 520 IF C=3 THEN 590
JZ 530 IF C=8 THEN ? "◘":POP :CLOSE #2:OP
   EN #2,6,0,"D:*.CAL":GOTO 720
KW 540 IF C=7 THEN 2A90
ZB 550 IF C=6 THEN 830
EJ 560 IF C=5 AND NWCAL=IN OR QUIT=IN THE
   N ? :? "      ▫▫▫Saving calendar▫▫▫":? :
   CLNDR=OFF:GOTO 1350
ZD 570 IF C=5 THEN ? :? "      ▫▫▫Saving ca
   lendar▫▫▫":? :GOTO 1350
GZ 580 IF C=4 THEN 1510
MW 590 REM LOAD CALENDAR FROM DISK
JX 600 M$="":C=0:M=0:Y=0:LOD=IN:GOSUB 230
   0
ZY 610 ? "↑↑↑↑↑↑⇧⇧⇧⇧⇧⇧⇧⇧↓↓↓↓      ▫▫▫Loadin
   g calendar▫▫▫";:? :? "         please 
   wait   "
HL 620 TRAP 40000:M$=STR$(M):IF M<10 THEN
    M$="00":M$(2,2)=STR$(M)
DZ 621 Y$=STR$(Y):D$(LEN(D$)+1)=M$:M$(LEN
   (M$)+1)=Y$:D$(LEN(D$)+1)=Y$
IT 625 D$(LEN(D$)+1)=".CAL"
KQ 630 TRAP 700:CLOSE #1:OPEN #1,4,0,D$:I
   NPUT #1;Y:INPUT #1;M:INPUT #1;DY
WA 640 GOSUB 2640
VI 650 PLACE=1:FOR T1=1 TO 6:INPUT #1;L$:
   C$(PLACE,PLACE+186)=L$:PLACE=PLACE+187
   :NEXT T1
XO 660 PLACE=1:FOR T1=1 TO 6:INPUT #1;L$:
   C1$(PLACE,PLACE+186)=L$:PLACE=PLACE+18
   7:NEXT T1
LQ 670 CLOSE #1
LV 680 RESTORE 2820:FOR X=1 TO M:READ MO$
   :NEXT X:D$="D:X"
RJ 690 TRAP 40000:GOTO 260
DV 700 TRAP 40000:CLOSE #2:OPEN #2,6,0,"D
   :*.CAL":? "◘"
SE 710 POSITION 3,1:? "That calendar is n
   ot on this disk":CLNDR=OFF
MB 720 POSITION 7,2:? "Months on this dis
   k are:"
FP 730 A=2:B=5:POKE 195,0
OW 740 FOR DIR=1 TO 2:INPUT #2,MNAME$
NM 750 IF MNAME$(3,3)="X" THEN MM=VAL(MNA
   ME$(4,LEN(MNAME$)-8)):RESTORE 2820:FOR
    X=1 TO MM:READ MO$:NEXT X
GG 760 IF B=20 THEN A=A+17:B=5
PK 770 DIR=DIR-1:IF MNAME$(3,3)="X" THEN
   POSITION A,B:? MO$;", ";MNAME$(LEN(MNA
   ME$)-7,LEN(MNAME$)-4):B=B+1
BP 780 IF MNAME$(5,8)="FREE" THEN DIR=2:U
   =INT(VAL(MNAME$(1,3))):POSITION 9,21:?
    "Room for ";INT(U/19);" calendars."
ZC 790 IF DIR=2 AND A=2 AND B=5 THEN POSI
   TION 2,10:? "There are no calendars on
    this disk."
UT 800 NEXT DIR
KU 810 D$="D:X":POKE 764,255:POSITION 5,2
   3:? RS$;:GET #3,K
OP 820 GOTO 260
DK 830 REM PRINT PRESENT CALENDAR
WG 840 TRAP 1320:POKE 710,228
SB 850 ? :? :? "         ▫▫▫printing calenda
   r▫▫▫"
BQ 860 CLOSE #7:OPEN #7,8,0,"P:":? #7;"◘@
   ";:REM OPEN CHANNEL TO PRINTER AND
           RESET DEFAULTS
EZ 870 REM CREATE PAGE 2" BY 3" NEXT TO
           A LIKE-SIZED PAGE
HH 880 ? #7;"◘C";CHR$(66);:REM SET FORM L
   ENGTH IN LINES
AS 890 ? #7;CHR$(15);CHR$(27);"3";CHR$(12
   ):REM SET COMPRESSED PRINT AND SET
       LINE SPACING TO 12 L.P.I.
QQ 900 ? #7;LINE$,LINE$
XY 910 ? #7;"◘S1";:REM SET PRINTER SUPERS
   CRIPT MODE
EK 920 ? #7;"◘U1";:REM EPSON UNIDIRECTION
   AL MODE
RE 930 CTR=17-LEN(Y$)/2:FOR X=1 TO CTR:?
   #7;" ";:NEXT X:? #7;Y$,
QS 940 FOR X=18+LEN(Y$)/2 TO 34:? #7;" ";
   :NEXT X:? #7;APC$
KP 950 ? #7
YM 960 CTR=17-LEN(MO$):FOR X=1 TO CTR:? #
   7;" ";:NEXT X:? #7;"◘W1";MO$;"◘W0";
IY 970 FOR X=18+LEN(MO$) TO 40:? #7;" ";:
   NEXT X
GL 980 ? #7;C$(7*34+1,8*34)
HA 990 ? #7;BL$,C1$(7*34+1,8*34)
HS 1000 ? #7;"   SUN MON TUE WED THU FRI
   SAT ",C$(8*34+1,9*34)
ZB 1010 PLACE=1:FOR T1=1 TO 6
BD 1020 INFO$(PLACE,PLACE+33)=MODLINE$:PL
   ACE=PLACE+34
WQ 1030 FOR T2=1 TO 4:INFO$(PLACE,PLACE+3
   3)=BLINE$:PLACE=PLACE+34:NEXT T2
GR 1070 NEXT T1
IM 1080 INFO$(PLACE,PLACE+33)=MODLINE$
LO 1090 XX=1:FOR Z=71 TO 951 STEP 170:FOR
    X=Z TO Z+24 STEP 4:INFO$(X+2,X+3)=DT$
   (XX,XX+1)
VX 1100 IF DT$(XX,XX)<>" " THEN D=INT(VAL
   (DT$(XX,XX+1))):GOTO 1130
ON 1110 IF DT$(XX+1,XX+1)<>" " THEN D=INT
   (VAL(DT$(XX+1,XX+1))):GOTO 1130
PV 1120 GOTO 1150
UF 1130 IF C$(D*34-29,D*34-1)<>BL$(1,29)
   THEN INFO$(X+69,X+69)="*"
LT 1140 IF C1$(D*34-29,D*34-1)<>BL$(1,29)
    THEN INFO$(X+70,X+70)="*"
GE 1150 XX=XX+2:NEXT X:NEXT Z
GZ 1160 ? #7;INFO$(1,34),C$(8*34+1,9*34)
CX 1170 ? #7;INFO$(35,67),C1$(8*34+1,9*34
   )
BC 1180 Z=10:FOR X=69 TO 1088 STEP 68
BN 1190 ? #7;INFO$(X,X+33),C$((Z-1)*34+1,
   Z*34)
UY 1200 ? #7;INFO$(X+34,X+67),C1$((Z-1)*3
   4+1,Z*34):Z=Z+1
LF 1210 NEXT X
PN 1220 CTR=17-LEN(NAME$)/2:FOR X=1 TO CT
   R:? #7;" ";:NEXT X
SB 1225 ? #7;NAME$;:FOR X=CTR+LEN(NAME$)+
   0.5 TO 40:? #7;" ";:NEXT X
SD 1230 ? #7;C$(24*34+1,25*34)
VG 1240 ? #7;BL$,C1$(24*34+1,25*34)
HQ 1250 ? #7;APC$,C$(25*34+1,26*34)
XI 1260 ? #7;BL$,C1$(25*34+1,26*34)
GC 1270 FOR X=1 TO 7
YE 1280 ? #7;C$((X-1)*34+1,X*34),C$((X+25
   )*34+1,(X+26)*34)
EB 1290 ? #7;C1$((X-1)*34+1,X*34),C1$((X+
   25)*34+1,(X+26)*34)
LE 1300 NEXT X
JX 1310 ? #7;LINE$,LINE$
VG 1320 IF PEEK(195)=138 THEN ? "◘↓↓↓↓↓↓
   ↓↓     PRINTER DOES NOT RESPOND"
CY 1330 IF PEEK(195)=138 THEN POSITION 6,
   23:? RS$;:GET #3,K
QP 1340 GOTO 260
CB 1350 REM SAVE CALENDAR TO DISK
WJ 1360 M$=STR$(M):IF M<10 THEN M$="00":M
   $(2,2)=STR$(M)
PL 1362 Y$=STR$(Y):D$(LEN(D$)+1)=M$:M$(LE
   N(M$)+1)=Y$:D$(LEN(D$)+1)=Y$
HF 1365 D$(LEN(D$)+1)=".CAL"
TE 1370 TRAP 1410:CLOSE #2:OPEN #2,4,0,D$
   :? "This calendar already exists on th
   is":? "disk. Replace  Y/N ?";
UG 1380 TRAP 40000:GET #3,K:IF CHR$(K)<>"
   N" AND CHR$(K)<>"Y" THEN 1380
AG 1390 IF CHR$(K)="N" THEN M$=D$(4):D$=D
   $(1,3):NWCAL=OFF:QUIT=OFF:CLNDR=IN:GOT
   O 260
JK 1400 ? "↑↑⇧⇧⇧";
NQ 1410 IF PEEK(195)=138 THEN ? "↑↑⇧⇧↓↓
    Disk drive does not respond...":POSIT
   ION 5,23:? RS$;:GET #3,K:GOTO 1480
WZ 1420 REM "PRINT" CALENDAR TO DISK
DK 1430 TRAP 1460:CLOSE #2:OPEN #2,8,0,D$
   :? #2;Y:? #2;M:? #2;DY
```

*continued on next page*

```
JI 1440 PLACE=1:FOR T1=1 TO 6:? #2;C$(PLACE,PLACE+186):PLACE=PLACE+187:NEXT T1
TQ 1450 PLACE=1:FOR T1=1 TO 6:? #2;C1$(PLACE,PLACE+186):PLACE=PLACE+187:NEXT T1
QD 1460 IF PEEK(195)=162 THEN CLOSE #2:? "↑↑↑↑↓↓":? ," Disk is full ":XIO 33,#2,0,0,D$:POSITION 5,23:? RS$;:GET #3,K
QQ 1470 IF PEEK(195)=144 THEN ? "↑↑↑↑↓↓ Trouble writing to disk":POSITION 5,23:? RS$;:GET #3,K
TT 1480 TRAP 40000:D$="D:X":CLOSE #2
RY 1490 IF YN$="9" THEN END
QH 1500 GOTO 260
XV 1510 REM ENTER/EDIT CALENDAR
AA 1520 TRAP 1520:POKE 82,2:DATE$="":? "K":STUFF$=BL$(1,31)
FM 1530 ? "Appointment for which date? __":? :? "Press ESC to return to main menu←←←←←←";
EI 1540 GET #3,K:IF K<>27 AND K<48 OR K>58 AND K<>155 THEN 1540
MO 1550 IF K=27 OR K=155 THEN POKE 82,2:TRAP 40000:GOTO 260
HO 1560 ? CHR$(K);:DATE$(1,1)=CHR$(K):CLNDR=IN
NR 1570 GET #3,K:IF K<>27 AND K<48 OR K>58 AND K<>126 AND K<>155 THEN 1570
JW 1580 IF K=27 OR K=155 THEN 1610
LG 1590 IF K=126 THEN ? "←_←";:GOTO 1540
GN 1600 ? CHR$(K);:DATE$(2,2)=CHR$(K)
KC 1610 DATE=INT(VAL(DATE$))
MA 1620 IF DATE>DY THEN ? :? "K↓↓↓↓↓Only ";DY;" days in ";MO$;", ";Y;".":POSITION 5,23:? RS$;:GET #3,K:GOTO 1510
LL 1630 ? "K"
KB 1640 IF C$(DATE*34-30,DATE*34)<>BL$(1,31) THEN POSITION 5,10:? "One Appointment/memo listed for"
ZR 1650 IF C$(DATE*34-30,DATE*34)<>BL$(1,31) THEN POSITION 13,11:? "  ";MO$;" ";DATE;"  ":POSITION 1,14:? "1 "
NG 1660 IF C$(DATE*34-30,DATE*34)<>BL$(1,31) THEN FOR X=13 TO (X+LEN(MO$)+LEN(DATE$))+4:POSITION X,12:? "□":NEXT X
LV 1670 IF C1$(DATE*34-30,DATE*34)<>BL$(1,31) THEN POSITION 5,10:? "Two Appointment(s)/memo(s)":POSITION 1,16:? "2 "
SN 1680 POSITION 3,3:? "□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□":POSITION 3,5:? "□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□";
XA 1690 POSITION 2-LEN(DATE$),4:? DATE$;".";:POSITION 4,4:? BL$(1,29);"|":POSITION 4,4
GN 1700 POSITION 4,14:? C$(DATE*34-30,DATE*34):POSITION 4,16:? C1$(DATE*34-30,DATE*34):POSITION 3,4:? " ←";
YU 1710 POSITION 6,0:? "Enter appointment/memo":POSITION 6,1:? "     or press 'ESC'     "
LF 1720 FOR X=1 TO 31
CG 1730 GET #3,K:IF X<2 AND (K=27 OR K=155) THEN 1510
CI 1740 IF K=125 THEN POSITION 3,4:? BL$(1,30):X=1:GOTO 1730
BX 1750 IF X=31 AND K<>155 AND K<>126 THEN 1730
UV 1760 IF K<27 OR K=96 OR K=123 OR (K>125 AND K<>126 AND K<>155 AND K<157) THEN 1730
NF 1770 IF X<2 AND K=126 THEN 1730
RE 1780 IF X>1 AND K=126 THEN X=X-1:POSITION (2+X),4:? " ":GOTO 1730
EH 1790 IF K=155 THEN STUFF$=STUFF$(1,30):GOTO 1820
NI 1800 POSITION (2+X),4:? CHR$(K):STUFF$(X,X)=CHR$(K)
LR 1810 NEXT X
IO 1820 IF C$(DATE*34-30,DATE*34)=BL$(1,31) THEN C$(DATE*34-30,DATE*34)=STUFF$:GOTO 1510
KW 1830 IF C1$(DATE*34-30,DATE*34)=BL$(1,31) THEN C1$(DATE*34-30,DATE*34)=STUFF$:GOTO 1510
KV 1840 POSITION 3,18:? "Which one do you want to replace":? "    1    2    or 0  (for neither)  "
BS 1850 GET #3,K:IF K<48 OR K>50 THEN 1850
KF 1860 IF K=49 THEN C$(DATE*34-30,DATE*34)=STUFF$:GOTO 1880
ZC 1870 IF K=50 THEN C1$(DATE*34-30,DATE*34)=STUFF$
WI 1880 IF C$(DATE*34-30,DATE*34)=BL$(1,31) THEN C$(DATE*34-30,DATE*34)=C1$(DATE*34-30,DATE*34):GOTO 1900
SW 1890 GOTO 1910
GM 1900 C1$(DATE*34-30,DATE*34)=BL$(1,31)
QE 1910 GOTO 1510
OX 2090 REM SHOW CALENDAR
IS 2100 RESTORE 2820:FOR X=1 TO M:READ MO$:NEXT X
AE 2110 PLACE=35:INFO$(1,34)="   SUN MON TUE WED THR FRI SAT "
PV 2120 FOR T1=1 TO 6:INFO$(PLACE,PLACE+33)=MODLINE$:PLACE=PLACE+34
VL 2130 FOR X=1 TO 2:INFO$(PLACE,PLACE+33)=BLINE$:PLACE=PLACE+34:NEXT X
GO 2150 NEXT T1
UY 2160 ? "K";:? ,"  ";Y$:FOR X=1 TO 15-LEN(MO$)/2:? " ";:NEXT X:? MO$:?
IM 2170 INFO$(PLACE,PLACE+33)=MODLINE$
BR 2180 XX=1:FOR Z=71 TO 650 STEP 102:FOR X=Z TO Z+24 STEP 4:INFO$(X+2,X+3)=DT$(XX,XX+1)
ZG 2190 IF DT$(XX,XX)<>" " THEN D=INT(VAL(DT$(XX,XX+1))):GOTO 2220
RA 2200 IF DT$(XX+1,XX+1)<>" " THEN D=INT(VAL(DT$(XX+1,XX+1))):GOTO 2220
QF 2210 GOTO 2240
QO 2220 IF C$(D*34-29,D*34-1)<>BL$(1,29) THEN INFO$(X+35,X+35)="*"
UT 2230 IF C1$(D*34-29,D*34-1)<>BL$(1,29) THEN INFO$(X+36,X+36)="*"
GE 2240 XX=XX+2:NEXT X:NEXT Z
QK 2250 FOR X=1 TO 650 STEP 34
MH 2260 ? INFO$(X,X+33)
ZC 2270 NEXT X:POKE 764,255
PI 2280 ? RS$;:GET #3,K
UL 2290 POKE 82,2:GOTO 260
RD 2300 REM DETERMINE YEAR AND MONTH
TF 2310 POKE 710,69:M$="":IF LOD=IN THEN POKE 710,85:? "Load calendar for what month (1-12)?";:GOTO 2330
PG 2320 ? "Create calendar for what month (1-12)?";
ZN 2330 GET #3,K:IF K<>27 AND K<48 OR K>57 THEN 2330
UV 2340 IF K=27 THEN POP :GOTO 260
RS 2350 M$(1,1)=CHR$(K):? M$(1,1);
IJ 2360 GET #3,K
VE 2370 IF K=27 THEN POP :GOTO 260
BZ 2380 IF K<48 OR K>57 AND K<>155 AND K<>126 THEN 2360
TN 2390 IF K=155 THEN M=INT(VAL(M$)):GOTO 2420
EH 2400 IF K=126 THEN ? CHR$(K);:GOTO 2330
UQ 2410 M$(2,2)=CHR$(K):? M$(2,2);:M=INT(VAL(M$))
KR 2420 IF  NOT (M<1 OR M>12) THEN 2430
SH 2425 ? :? :? ,"ONLY 1 - 12, PLEASE":POSITION 5,23:? RS$;:GET #3,K:? "↑↑↑↑↑↑↑↑↑↑↑↑↑↑":GOTO 2300
CE 2430 ? :? :? "For what year (ex. 1988)?";
DJ 2440 GET #3,K:IF K<>27 AND K<48 OR K>57 THEN 2440
VA 2450 IF K=27 THEN POP :GOTO 260
FT 2460 Y$(1,1)=CHR$(K):? Y$(1,1);
LG 2470 GET #3,K:IF K<>27 AND K<48 OR K>57 AND K<>155 AND K<>126 THEN 2470
IC 2480 IF K=126 THEN ? CHR$(K);:GOTO 2440
TV 2490 IF K=155 THEN Y=INT(VAL(Y$)):GOTO 2620
UN 2500 IF K=27 THEN POP :GOTO 260
IE 2510 Y$(2,2)=CHR$(K):? Y$(2,2);
ZY 2520 GET #3,K:IF K<>27 AND K<48 OR K>57 AND K<>155 AND K<>126 THEN 2520
LZ 2530 IF K=126 THEN ? CHR$(K);:GOTO 2470
TI 2540 IF K=155 THEN Y=INT(VAL(Y$)):GOTO 2620
VC 2550 IF K=27 THEN POP :GOTO 260
LR 2560 Y$(3,3)=CHR$(K):? Y$(3,3);
NZ 2570 GET #3,K:IF K<>27 AND K<48 OR K>57 AND K<>155 AND K<>126 THEN 2570
GR 2580 IF K=126 THEN ? CHR$(K);:GOTO 2520
TX 2590 IF K=155 THEN Y=INT(VAL(Y$)):GOTO 2620
UP 2600 IF K=27 THEN POP :GOTO 260
WV 2610 Y$(4,4)=CHR$(K):Y=INT(VAL(Y$)):? Y$(4,4)
FK 2620 IF LOD=IN THEN LOD=OFF:RETURN
LZ 2630 ? "↑↑↑↑↑↑↑↑↑↑↑↑↓↓↓↓↓     □□□Creating calendar□□□":? :? "     please wait     ";
```

```
RJ 2640 TRAP 40000:DY$="31283130313031313
   0313031"
GB 2650 IF M<3 THEN M=M+12:Y=Y-1
ZC 2660 N=2*M+INT(0.6*(M+1))+Y+INT(Y/4)-I
   NT(Y/100)+INT(Y/400)+3
NF 2670 N=INT((N/7-INT(N/7))*7+0.05):IF N
   =0 THEN N=7
TT 2680 IF M>12 THEN M=M-12:Y=Y+1
DG 2690 DY=VAL(DY$(M*2-1,M*2))
XP 2700 IF M=2 THEN IF (Y/4=INT(Y/4) AND
   Y/400<>INT(Y/400)) THEN DY=DY+1
JH 2710 RESTORE 2820:FOR X=1 TO M:READ MO
   $:NEXT X
JW 2720 FOR X=1 TO 42:DATEMAT(X)=0:NEXT X
   :NUM=1:FOR X=N TO DY+N-1:DATEMAT(X)=NU
   M:NUM=NUM+1:NEXT X
RQ 2730 XX=1:FOR X=1 TO 42:IF DATEMAT(X)>
   9 THEN DT$(XX,XX+1)=STR$(DATEMAT(X)):G
   OTO 2750
PG 2740 DT$(XX+1,XX+1)=STR$(DATEMAT(X)):D
   T$(XX,XX)=" ":IF DATEMAT(X)=0 THEN DT$
   (XX+1,XX+1)=" "
ME 2750 XX=XX+2
MF 2760 NEXT X
OZ 2770 FOR X=1 TO DY:IF X<10 THEN C$(X*3
   4-33,X*34-33)=" ":C$(X*34-32,X*34-32)=
   STR$(X):C$(X*34-31,X*34-30)=". "
IS 2780 IF X>9 THEN C$(X*34-33,X*34-32)=S
   TR$(X):C$(X*34-31,X*34-30)=". "
MO 2790 NEXT X
XE 2800 C1$=C$
AT 2810 RETURN
NQ 2820 DATA JANUARY,FEBRUARY,MARCH,APRIL
   ,MAY,JUNE,JULY,AUGUST,SEPTEMBER,OCTOBE
   R,NOVEMBER,DECEMBER
AM 2830 REM PERSONALIZE CALENDAR
AC 2840 TRAP 40000:CLOSE #4:OPEN #4,8,0,"
   D:NAME":? "What is your name (up t
   o 23":? "characters)?";
BL 2850 INPUT #16;NAME$:IF NAME$="" THEN
   NAME$="                          ":? #4
   ;NAME$:CLOSE #4:GOTO 200
DD 2860 STUFF$(1,1)=" ":STUFF$(25,25)=STU
   FF$:STUFF$(2)=STUFF$:NAME$(LEN(NAME$)+
   1,LEN(NAME$)+2)="'s"
SP 2870 STUFF$(12-LEN(NAME$)/2,12+LEN(NAM
   E$))=NAME$:NAME$=STUFF$:? #4;NAME$:CLO
   SE #4:POKE 195,0:GOTO 200
```

# RAMDISK SENTRY

*Article on page 26*

## *LISTING 1*

Don't type the TYPO II Codes!

```
VB 10 REM NOFORMAT
KE 20 REM BY GLENN K. SMITH
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
QV 70 FN$="D:RAMDISK.OBJ":REM THIS IS THE
    NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")     "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
LB 1000 DATA 278
NL 1010 DATA 255255000080251080238240002O
   32234080169006133084169004133085032182
   080083101116116105110103032
OW 1020 DATA 085112032065084065082073032O
   49051048088069032082065077068105115107
   032155000169008133085032182
ML 1030 DATA 080082065077068105115107032O
   78111116032070111114109097116116101100
   033032155155155155155000169
XQ 1040 DATA 013133085032182080160240236
   29222524322916024722523324416015500017
   3010007009128141010007032224
AD 1050 DATA 007032241080162064169003157O
   66003169251157068003169080157069003169
   004157074003169000157075003
RE 1060 DATA 032086228162064189067003048O
   05169056141063021032241080165020024105
   128197020208252206240002076
OQ 1070 DATA 234080104141199080104141200O
   80238199080208003238200080173255255240
   006032218080076190080173200
XL 1080 DATA 080072173199080072096162000
   14207200314207300316001114006600307608
   6228032182080125155000096162
QD 1090 DATA 064169012157066003076086228O
   68252080005081056058068085080046083089
   083155224002225002000080
```

## *LISTING 2*

```
0100 ;NOFORMAT
0110 ;BY GLENN K. SMITH
0120 ;(c)1988, ANTIC PUBLISHING
0130       .OPT NO LIST
0140       .OPT OBJ
0150       *=  $5000
0160 ;
0170 ;THIS PROGRAM WILL SETUP A
0180 ;RAMDISK AS DRIVE #8. IT WILL
0190 ;NOT FORMAT IT SO ANY PREVIOUS
0200 ;FILES WILL REMAIN INTACT. IT
0210 ;ALSO CHECKS TO SEE IF DUP.SYS
0220 ;IS PRESENT IN THE RAMDISK.
0230 ;
0240 ROWCRS = $54
0250 COLCRS = $55
0260 RTCLOK = $14
0270 CURSOR = $02F0
0280 ICCOM = $0342
0290 ICSTA = $0343
0300 ICBAL = $0344
0310 ICBAH = $0345
0320 ICBLL = $0348
0330 ICBLH = $0349
0340 ICAUX1 = $034A
0350 ICAUX2 = $034B
0360 SIOV = $E459
0370 CIOV = $E456
0380 DRVBYT = $070A
0390 DINIT = $07E0
0400 DUPDRV = $153F
0410 ;
0420 RAMDISK
0430       INC CURSOR   ;HIDE CURSOR
0440       JSR CLRS     ;CLEAR SCREEN
0450       LDA #$06     ;POSITION 6,4
0460       STA ROWCRS
0470       LDA #$04
0480       STA COLCRS
0490       JSR PRINT
0500       .BYTE "Setting Up ATARI 130XE
 RAMDisk "
0510       .BYTE $9B,$00
0520       LDA #$08     ;8 SPACES OVER
0530       STA COLCRS
0540       JSR PRINT
```

*continued on next page*

```
0550        .BYTE "RAMDisk Not Formatted!"
0560        .BYTE $9B,$9B,$9B,$9B,$9B,$00
0570        LDA #$0D     ;13 SPACES OVER
0580        STA COLCRS
0590        JSR PRINT
0600        .BYTE "Please wait"
0610        .BYTE $9B,$00
0620        LDA DRVBYT   ;SAY WE HAVE DRIVE #8
0630        ORA #$80
0640        STA DRVBYT
0650        JSR DINIT    ;INIT DRIVE #8
0660 ;
0670        JSR CLOSE    ;CLOSE IOCB
0680        LDX #$40     ;IOCB #4
0690        LDA #$03     ;OPEN
0700        STA ICCOM,X
0710        LDA # <DUPSYS ;D8:DUP.SYS
0720        STA ICBAL,X
0730        LDA # >DUPSYS
0740        STA ICBAH,X
0750        LDA #$04     ;INPUT
0760        STA ICAUX1,X
0770        LDA #$00     ;AUX #2
0780        STA ICAUX2,X
0790        JSR CIOV     ;DO IT
0800        LDX #$40     ;IOCB #4
0810        LDA ICSTA,X ;GET STATUS
0820        BMI NOTFND   ;FILE NOT FOUND
0830 ;
0840        LDA #'8      ;IS D8:
0850        STA DUPDRV
0860 NOTFND
0870        JSR CLOSE    ;CLOSE IOCB
0880 ;
0890        LDA RTCLOK   ;WAIT
0900        CLC
0910        ADC #$80     ;128 JIFFIES
0920 WAIT
0930        CMP RTCLOK
0940        BNE WAIT
0950 ;
0960        DEC CURSOR   ;RESTORE CURSOR
0970        JMP CLRS     ;CLEAR SCREEN
0980 ;
0990 PRINT
1000        PLA          ;GET STRING ADDR-1
1010        STA STRING+1
1020        PLA
1030        STA STRING+2
1040 NEXTCH
1050        INC STRING+1 ;GET CORRECT ADDR
1060        BNE STRING
1070 ;
1080        INC STRING+2
1090 STRING
1100        LDA $FFFF    ;STRING ADDR
1110        BEQ ENDOUT   ;ALL DONE?
1120 ;
1130        JSR COUT     ;PRINT CHAR
1140        JMP NEXTCH   ;GET ANOTHER ONE
1150 ;
1160 ENDOUT
1170        LDA STRING+2 ;GET RETURN ADDR
1180        PHA
1190        LDA STRING+1
1200        PHA
1210        RTS
1220 ;
1230 COUT   LDX #$00     ;IOCB #0
1240        STX ICBLL    ;LENGTH LSB
1250        STX ICBLH    ;LENGTH MSB
1260        LDY #$0B     ;PUT
1270        STY ICCOM
1280        JMP CIOV     ;PUT CHAR
1290 ;
1300 CLRS
1310        JSR PRINT    ;CLEAR SCREEN
1320        .BYTE "}"
1330        .BYTE $9B,$00
1340        RTS
1350 ;
1360 CLOSE
1370        LDX #$40     ;CLOSE IOCB #4
1380        LDA #$0C
1390        STA ICCOM,X
1400        JMP CIOV
1410 ;
1420 DUPSYS
1430        .BYTE "D8:DUP.SYS"
1440        .BYTE $9B
1450 ;
1460        *=  $02E0
1470        .WORD RAMDISK
1480        .END
```

# DOC PRINT-PRO

*Article on page 33*

## LISTING 1

Don't type the TYPO II Codes!

```
DR 10 REM DOCUMENTATION PRINTER
QB 20 REM BY ROLAND FETZER
QH 30 REM (c)1988, ANTIC PUBLISHING
EJ 40 DIM A$(130),D$(25),K$(25),N$(3),P$(1),R$(14),FILE$(17),YN$(1)
ED 50 ? CHR$(125):POSITION 6,6:? "What screen color do you want?":Q=0:R$="
        "
YJ 60 ? :? :? :? R$;"1: Default":? R$;"2: Amber":? R$;"3: Green":? R$;"4: Grey"
UB 70 TRAP 70:POSITION 10,17:? "Select a number";:INPUT Q:TRAP 40000
GS 80 IF Q<1 OR Q>4 OR Q<>INT(Q) THEN 70
VP 90 ON Q GOTO 140,110,120,130
ZL 100 REM SET THE COLORS
DP 110 POKE 710,58:POKE 709,0:GOTO 140
AV 120 POKE 710,44:POKE 709,0:GOTO 140
ZH 130 POKE 710,14:POKE 709,0:GOTO 140
XS 140 ? CHR$(125):POSITION 9,8:? "DOCUMENTATION READER":POSITION 9,9:? "====================="
AI 150 YN$="":? :? "Did You Insert The Disk Which Has The Document On It(Y/N)";:INPUT YN$
AY 160 T=0:P=0:K=0:R=0:IF YN$(1,1)="Y" THEN GOSUB 510
NS 170 IF YN$(1,1)="N" THEN 140
JF 180 ? :TRAP 550:? "What is the name of the document ":INPUT K$
ZV 190 ? CHR$(125):POSITION 5,9:? "DOCUMENTATION FOR ";K$
ZG 200 GOSUB 1000:POSITION 7,12:? "PRESS ANY KEY TO SCROLL"
FA 210 POSITION 8,15:? "SCREEN OR PRINTER";:INPUT N$:? :?
OR 220 IF N$(1,1)="S" OR N$(1,1)="s" THEN 240
HM 230 IF N$(1,1)="P" OR N$(1,1)="p" THEN 320
LK 240 POKE 752,1:CLOSE #1:OPEN #1,4,0,K$
I1 250 TRAP 270:INPUT #1;A$:R=R+INT(LEN(A$)/38)+1:? A$:IF R>=18 THEN GOSUB 470
OG 260 GOTO 250
FP 270 IF PEEK(195)=136 THEN CLOSE #1:TRAP 40000
OM 280 ? :? "------------------ END ----------------":POKE 752,0
FE 290 YN$="":? :? "Do you want to read another document(Y/N)";:INPUT YN$
CU 300 IF YN$(1,1)<>"N" THEN 160
KK 310 GRAPHICS 0:END
XF 320 ? CHR$(125):POSITION 2,10:? "DID YOU SET PAPER TO THE TOP OF ITS   FORM(Y/N)";:INPUT P$
QN 330 IF P$(1,1)<>"Y" THEN 320
JD 340 LPRINT :LPRINT :LPRINT :LPRINT :POKE 752,1
AT 350 CLOSE #1:OPEN #1,4,0,K$:? CHR$(125):POSITION 15,12:? "PRINTING!"
GF 360 TRAP 400:INPUT #1;A$:T=T+1
HG 370 CLOSE #2:OPEN #2,8,0,"P:"
JW 380 ? #2;"                    ";A$:IF T=57 THEN GOSUB 490
PI 390 GOTO 360
SW 400 IF PEEK(195)=136 THEN CLOSE #1:CLO
```

```
   SE #2:POKE 752,0:TRAP 40000
TI 410 C=0:C=59-T:FOR K=1 TO C:LPRINT :NE
   XT K
AD 420 LPRINT "
            -";P+1;"-"
MC 430 ? :? "----------------- END --------
   ---------":POKE 752,0
DF 440 YN$="":? :? "Do you want to print
   another document(Y/N)";:INPUT YN$
XJ 450 IF YN$(1,1)="Y" THEN 160
MQ 460 IF YN$(1,1)="N" THEN 310
IF 470 CLOSE #2:OPEN #2,4,0,"K:":GET #2,K
   EY:IF KEY=ASC(" ") THEN 480
TA 480 R=0:CLOSE #2:RETURN
NU 490 T=0:P=P+1:? #2:? #2:? #2;"
                          -";P;"-"
TN 500 FOR M=1 TO 6:? #2:NEXT M:RETURN
PY 510 CLOSE #2:OPEN #2,6,0,"D1:*.*":? CH
   R$(125):?
UL 520 INPUT #2,FILE$:IF ASC(FILE$(1,1))>
   47 THEN 540
UH 530 ? FILE$;:INPUT #2,FILE$:? "  ";FIL
   E$:IF ASC(FILE$(1,1))<47 THEN 520
VS 540 CLOSE #2:? :? "          FILES ON D
   ISK D1":POKE 752,0:? :RETURN
TM 550 ? CHR$(125):POSITION 11,10:? ">BAD
    FILE NAME<":FOR S=1 TO 300:NEXT S:TRA
   P 40000:YN$="Y":GOTO 160
EH 1000 IF LEN(K$)>3 THEN IF K$(1,1)="D"
   AND K$(3,3)=":" THEN 1050
MZ 1010 IF LEN(K$)>2 THEN IF K$(1,2)="D:"
    THEN 1050
QA 1030 D$="D1:":L=LEN(K$):D$(4,L+3)=K$:K
   $=D$
LV 1050 D$=K$:RETURN
```

# SUPER SIEVE

*Article on page 31*

## LISTING 1

Don't type the TYPO II Codes!

```
RW 1 REM SIEVE PRIME FINDER
PU 2 REM DENIS DeVRIES
OP 3 REM (c)1988, ANTIC PUBLISHING INC.
PL 5 REM MOVE MEMTOP DOWN
TW 10 POKE 106,144:GRAPHICS 0:POKE 752,1
YP 20 ? :? "             SUPER-SIEVE"
ZD 30 FOR I=14592 TO 15016:READ M:POKE I,
   M:NEXT I
ZW 40 ? :? "Test a number for prime (1)"
GF 50 ? :? "Find a prime by number  (2)"
XY 60 ? :? "Return to BASIC (3)"
TF 70 ? :? "What is your choice number";
FC 80 INPUT Z:POKE 710,148:Z=Z-1
HJ 90 IF Z<0 OR Z>2 THEN 70
HH 100 IF Z=2 THEN 9999
RW 110 ? :? "What is your number";:INPUT
   NU
YN 120 IF Z=1 THEN 210
ZF 130 IF NU<2 THEN 430
NZ 140 IF NU>16777213 THEN 440
JF 145 REM GET LAST DIGIT
LF 150 NO=NU/10:NO=INT(NO)*10:LAST=NU-NO
PY 160 ON LAST+1 GOTO 180,230,170,230,180
   ,180,180,230,180,230
MG 170 IF NU=2 THEN C=1:? CHR$(125):GOTO
   310
PD 180 IF NU=5 THEN C=3:? CHR$(125):GOTO
   310
AK 190 ? CHR$(125):? :? "Your number, ";N
   U;", is NOT a prime."
QH 200 GOTO 40
YX 210 IF NU=1 THEN Q=2:? CHR$(125):GOTO
   420
PN 220 IF NU>1492967 THEN 440
LG 230 HI=INT(NU/65536):REST=NU-65536*HI
MQ 235 REM SCREEN OFF, ATRACT ON
FZ 240 POKE 559,0:POKE 77,128
MC 245 TRAP 500
AU 250 X=USR(14592,HI,REST,Z)
DU 260 Q=PEEK(205)+PEEK(206)*256+PEEK(207
   )*65536
CY 270 C=PEEK(1542)+PEEK(1543)*256+PEEK(1
   544)*65536
YF 280 ? CHR$(125):POKE 77,0:POKE 559,34
BC 290 IF Z=1 THEN 420
NR 300 IF NU<Q THEN 360
HH 305 REM GREEN SCREEN
SK 310 POKE 710,192
ZL 320 ? :? "Your number, ";NU;", IS a pr
   ime!"
FY 330 ? "It is number ";C;" in the serie
   s of"
XX 340 ? "primes beginning with two."
QS 350 GOTO 40
CH 355 REM RED SCREEN
LB 360 POKE 710,32
YX 370 ? :? "Your number, ";NU;", is NOT
   a prime."
DK 380 ? "The next higher prime is ";Q;".
   "
GK 390 ? "It is number ";C;" in the serie
   s of"
XQ 400 ? "primes beginning with two."
QL 410 GOTO 40
SY 420 ? :? "Prime number ";NU;" is ";Q;"
   .":GOTO 40
ZL 430 ? "Your number is too small.":? CH
   R$(253):GOTO 40
KE 440 ? "Your number is too large.":? CH
   R$(253):GOTO 40
KU 500 POKE 559,34:POKE 77,0:END
AH 1000 DATA 104,216,169,0,168,153,0,55,1
   36,208
AN 1001 DATA 250,153,0,56,136,208,250,153
   ,0,6
WG 1002 DATA 136,208,250,133,206,133,207,
   169,1,153
RC 1003 DATA 0,54,136,208,250,104,104,141
   ,2,6
EM 1004 DATA 104,141,1,6,104,141,0,6,104,
   104
HL 1005 DATA 133,208,169,2,133,205,141,6,
   6,160
AB 1006 DATA 1,185,0,54,201,1,240,3,76,20
   6
LI 1007 DATA 57,152,24,10,133,205,230,205
   ,144,9
SX 1008 DATA 169,1,133,206,192,0,208,1,96
   ,165
TS 1009 DATA 208,208,18,165,205,205,0,6,1
   65,206
FL 1010 DATA 237,1,6,165,207,237,2,6,144,
   22
EH 1011 DATA 96,173,6,6,205,0,6,173,7,6
XI 1012 DATA 237,1,6,173,8,6,237,2,6,144
DK 1013 DATA 1,96,165,206,201,2,240,65,15
   2,24
WI 1014 DATA 101,205,133,203,165,206,105,
   0,133,204
UZ 1015 DATA 208,24,169,0,166,203,157,0,5
   4,165
UU 1016 DATA 205,24,101,203,133,203,144,2
   40,165,206
LB 1017 DATA 101,204,133,204,176,30,165,2
   05,174,6
NE 1018 DATA 6,157,0,56,165,206,157,128,5
   6,165
BW 1019 DATA 203,157,0,55,165,204,157,128
   ,55,169
DS 1020 DATA 0,133,204,238,6,6,169,1,153,
   0
QU 1021 DATA 54,200,192,0,240,3,76,61,57,
   238
LJ 1022 DATA 3,6,160,2,185,0,56,133,205,1
   85
RT 1023 DATA 128,56,133,206,169,0,133,207
   ,56,185
KX 1024 DATA 0,55,233,255,133,203,185,128
   ,55,233
WK 1025 DATA 0,133,204,208,22,169,0,166,2
   03,157
MO 1026 DATA 0,54,165,205,24,101,203,133,
   203,165
FP 1027 DATA 206,101,204,133,204,240,234,
   153,128,55
NZ 1028 DATA 165,203,153,0,55,200,192,98,
   208,190
FQ 1029 DATA 173,3,6,24,105,254,141,3,6,1
   73
OD 1030 DATA 4,6,105,1,141,4,6,144,3,238
```

*continued on next page*

```
ZY 1031 DATA 5,6,160,1,185,0,54,201,1,208
PS 1032 DATA 91,152,24,10,133,205,169,0,1
05,0
AX 1033 DATA 133,206,165,205,109,3,6,133,
205,165
IT 1034 DATA 206,109,4,6,133,206,169,0,10
9,5
SY 1035 DATA 6,133,207,165,208,208,18,165
,205,205
RS 1036 DATA 0,6,165,206,237,1,6,165,207,
237
QU 1037 DATA 2,6,144,22,96,173,6,6,205,0
TJ 1038 DATA 6,173,7,6,237,1,6,173,8,6
AR 1039 DATA 237,2,6,144,1,96,238,6,6,208
UM 1040 DATA 16,238,7,6,208,11,238,8,6,24

TK 1041 DATA 144,5,169,1,153,0,54,200,192
,0
QA 1042 DATA 208,148,76,222,57
QH 9999 POKE 106,160:GRAPHICS 0
```

## LISTING 2

```
0100 ; SUPER SIEVE!
0110 ; BY DENNIS DEVRIES
0120 ; (c)1988, ANTIC PUBLISHING
0130        *=  $3900
0140        .OPT NO EJECT
0150 LOK =    $CB      ;LOBYTE K       203

0160 MIK =    $CC      ;MDBYTE K       204

0170 LOQ =    $CD      ;LOBYTE PRIME 205

0180 MIQ =    $CE      ;MDBYTE PRIME 206

0190 HIQ =    $CD      ;HIBYTE PRIME 207

0200 LON =    $0600    ;LOBYTE TEST  153
6
0210 MIN =    $0601    ;MDBYTE TEST  153
7
0220 HIN =    $0602    ;HIBYTE TEST  153
8
0230 LOR =    $0603    ;LOBYTE R      153
9
0240 MIR =    $0604    ;MDBYTE R      154
0
0250 HIR =    $0605    ;HIBYTE R      154
1
0260 LOC =    $0606    ;LOBYTE COUNT 154
2
0270 MIC =    $0607    ;MDBYTE COUNT 154
3
0280 HIC =    $0608    ;HIBYTE COUNT 154
4
0290 F   =    $3600    ;SIEVE  13824
0300 KKL =    $3700    ;KK LOBYTE 14080
0310 KKM =    $3780    ;KK MDBYTE 14208
0320 PPL =    $3800    ;PP LOBYTE 14336
0330 PPM =    $3880    ;PP MDBYTE 14464
0340        PLA          ;START @ 14592
0350        CLD          ;CLEAR DECIMAL
0360        LDA #$00
0370        TAY
0380 LP7
0390        STA KKL,Y    ;CLEAR KK TABLE
0400        DEY
0410        BNE LP7
0420 ;
0430 LP8
0440        STA PPL,Y    ;CLEAR PP TABLE
0450        DEY
0460        BNE LP8
0470 ;
0480 LP6
0490        STA LON,Y    ;CLEAR PAGE 6
0500        DEY
0510        BNE LP6
0520 ;
0530        STA MIQ      ;CLEAR Q
0540        STA HIQ
0550        LDA #$01     ;SET F TO 1'S
0560 LPF
0570        STA F,Y
0580        DEY
0590        BNE LPF
0600 ;
0610        PLA          ;GET HIBYTE HIBYT
E
0620        PLA          ;GET HIBYTE LOBYT
E
0630        STA HIN
0640        PLA          ;GET MDBYTE
0650        STA MIN
0660        PLA          ;GET LOBYTE
0670        STA LON
0680        LDA #$02     ;FIRST PRIME
0690        STA LOQ      ;Q=2
0700        STA LOC      ;C=2
0710        LDY #$01
0720 LP1
0730        LDA F,Y      ;DOES F(Y)=1?
0740        CMP #$01     ;IF SO, HAVE PRIM
E
0750        BEQ WY1
0760 ;
0770        JMP STEP     ;CONTINUE SEARCH
0780 ;
0790 WY1
0800        TYA          ;MAKE Q=Y+Y+1
0810        CLC
0820        ASL A        ;A=Y+Y
0830        STA LOQ      ;Q=Y+Y
0840        INC LOQ      ;Q=Y+Y+1
0850        BCC CHK      ;IF Q<257
0860 ;
0870        LDA #$01
0880        STA MIQ      ;Q>255
0890        CPY #$00
0900        BNE CHK
0910 ;
0920        RTS
0930 CHK
0940        LDA LOC      ;TEST LOBYTE
0950        CMP LON
0960        LDA MIC      ;TEST MDBYTE
0970        SBC MIN
0980        LDA HIC      ;TEST HIBYTE
0990        SBC HIN
1000        BCC NEXT     ;Q<N
1010 ;
1020        RTS          ;Q=>N, DONE!
1030 NEXT
1040        LDA MIQ
1050        CMP #$02     ;BYTE SET?
1060        BEQ CPLUS    ;IF Q>512
1070 ;
1080        TYA          ;MAKE K=Y+Q
1090        CLC
1100        ADC LOQ
1110        STA LOK      ;K=Y+Q, LOBYTE
1120        LDA MIQ
1130        ADC #$00     ;GET CARRY
1140        STA MIK      ;K=Y+Q, MDBYTE
1150        BNE PEEP     ;IF K>255
1160 ;
1170 EF
1180        LDA #$00
1190        LDX LOK
1200        STA F,X      ;F(K)=0
1210        LDA LOQ
1220        CLC
1230        ADC LOK
1240        STA LOK      ;K=K+Q, LOBYTE
1250        BCC EF       ;ELSE ADD CARRY
1260 ;
1270        LDA MIQ
1280        ADC MIK
1290        STA MIK
1300        BCS STEP
1310 ;
1320 PEEP
1330        LDA LOQ
1340        LDX LOC
1350        STA PPL,X    ;PP(C)=Q, LOBYTE
1360        LDA MIQ
1370        STA PPM,X    ;PP(C)=Q, MDBYTE
1380        LDA LOK
1390        STA KKL,X    ;KK(C)=K, LOBYTE
1400        LDA MIK
1410        STA KKM,X    ;KK(C)=K, MDBYTE
1420        LDA #$00
1430        STA MIK      ;RESET K, NEXT LO
OP
1440 CPLUS
1450        INC LOC      ;C=C+1, 97 MAX
1460 STEP
1470        LDA #$01
1480        STA F,Y      ;F(Y)=1
1490        INY
1500        CPY #$00
1510        BEQ R1
1520 ;
1530        JMP LP1      ;GO BACK TO START
1540 R1
```

```
1550        INC LOR        ;R=1
1560 LP3
1570        LDY #$02
1580 LP2
1590        LDA PPL,Y
1600        STA LOQ        ;Q=PP(Y), LOBYTE
1610        LDA PPM,Y
1620        STA MIQ        ;Q=PP(Y), MDBYTE
1630        LDA #$00
1640        STA HIQ        ;RESET Q, NEXT LO
OP
1650        SEC
1660        LDA KKL,Y      ;K=KK(Y), LOBYTE
1670        SBC #255
1680        STA LOK        ;K=K-255
1690        LDA KKM,Y      ;K=KK(Y), MDBYTE
1700        SBC #$00       ;CARRY BIT?
1710        STA MIK
1720        BNE KK2
1730 ;
1740 EF2
1750        LDA #$00       ;ZERO MULTS. OF Q
1760        LDX LOK
1770        STA F,X        ;F(K)=0
1780        LDA LOQ
1790        CLC
1800        ADC LOK
1810        STA LOK        ;K=K+Q, LOBYTE
1820        LDA MIQ
1830        ADC MIK
1840        STA MIK        ;K=K+Q+CARRY
1850        BEQ EF2        ;MORE ZEROS
1860 ;
1870 KK2
1880        STA KKM,Y      ;FILL KK TABLE
1890        LDA LOK
1900        STA KKL,Y
1910        INY
1920        CPY #98
1930        BNE LP2        ;NEXT J
1940 ;
1950        LDA LOR        ;R=R+510
1960        CLC
1970        ADC #$FE       ;510 LOBYTE
1980        STA LOR
1990        LDA MIR
2000        ADC #$01       ;510 HIBYTE
2010        STA MIR
2020        BCC WY2
2030 ;
2040        INC HIR        ;CARRY BIT
2050 WY2
2060        LDY #$01
2070 LP4
2080        LDA F,Y        ;DOES F(Y)=1?
2090        CMP #$01       ;IF NOT, GET
2100        BNE STEP2      ;NEXT F(Y)
2110 ;
2120        TYA            ;MAKE Q=R+Y+Y
2130        CLC
2140        ASL A
2150        STA LOQ        ;Q=Y+Y, LOBYTE
2160        LDA #$00
2170        ADC #$00
2180        STA MIQ        ;Q=Y+Y, DONE
2190        LDA LOQ
2200        ADC LOR
2210        STA LOQ        ;Q=Y+Y+R, LOBYTE
2220        LDA MIQ
2230        ADC MIR
2240        STA MIQ        ;Q=Y+Y+R, MDBYTE
2250        LDA #$00
2260        ADC HIR
2270        STA HIQ        ;Q=Y+Y+R, HIBYTE
2280        LDA LOC        ;CHECK Q=>N?
2290        CMP LON
2300        LDA MIC
2310        SBC MIN
2320        LDA HIC
2330        SBC HIN
2340        BCC NXT2
2350 ;
2360        RTS            ;Q=>N, DONE!
2370 ;
2380 NXT2
2390        INC LOC        ;C=C+1
2400        BNE NXTY
2410 ;
2420        INC MIC
2430        BNE NXTY
2440 ;
2450        INC HIC
2460        CLC
2470        BCC NXTY       ;FORCED BRANCH
2480 ;
2490 STEP2
2500        LDA #$01
2510        STA F,Y        ;F(Y)=1
2520 NXTY
2530        INY            ;Y=Y+1
2540        CPY #$00
2550        BNE LP4        ;Y<256
2560 ;
2570        JMP LP3        ;GO 'ROUND AGAIN
2580        .END
```

# LOTTOPIK

*Article on page 39*

## *LISTING 1*

Don't type the TYPO II Codes!

```
OA  1 REM LOTTOPIK
TQ  2 REM BY JOHN FERGUSON
QR  3 REM (c)1988, ANTIC PUBLISHING
WQ  5 X=49:REM THE HIGHEST NUMBER IN YOUR
    STATE'S LOTTO
GX  10 DIM B(6),Q$(3),P$(30),P1$(30),P2$(5
    )
ND  20 GOTO 320
FR  30 POKE 82,6:? CHR$(125):?
XV  35 ? "          LOTTO NUMBERS"
MF  40 ? "          □□□□□ □□□□□□□"
IJ  50 FOR T=1 TO 5
FA  60 FOR N=0 TO 5:B(N)=-1:NEXT N
NC  70 A=INT(RND(0)*X)+1
GG  80 FOR N=0 TO 5
VP  90 IF A=B(N) THEN 70
NO  100 IF B(N)=-1 THEN B(N)=A:GOTO 70
FQ  110 IF B(5)<>-1 THEN 130
HT  120 NEXT N
CK  130 ?
HD  140 R=0
OP  150 FOR N=0 TO 4
XE  160 IF B(N)>B(N+1) THEN C=B(N):B(N)=B(
    N+1):B(N+1)=C
ID  170 NEXT N
XO  180 R=R+1:IF R<6 THEN 150
NM  190 P$=" "
OW  200 FOR N=0 TO 5
II  210 P1$=STR$(B(N)):IF LEN(P1$)=1 THEN
    P2$=P1$:P1$="0":P1$(2)=P2$
BL  220 P$(LEN(P$)+1)="  ":P$(LEN(P$)+1)=P
    1$
HW  230 NEXT N
XZ  240 ? :? P$
CU  250 IF P=1 THEN ? #2,P$:? #2
KK  260 NEXT T
DH  270 ? :? :? "More";
RC  280 IF P=1 THEN ? #2:? #2:? #2
GU  290 INPUT Q$
MR  300 IF Q$="N" OR Q$="NO" THEN POKE 82,
    2:? CHR$(125):END
QA  310 GOTO 30
EG  320 ? CHR$(125):? :? :POKE 82,2
QB  325 ? "                LOTTOPIK"
TP  330 ? :? :? "Do you want the results p
    rinted?"
CC  340 ? :? :INPUT Q$:FOR T=1 TO PEEK(20)
    :P=RND(0):NEXT T
LA  350 P=0:IF Q$="Y" OR Q$="YES" THEN P=1
LI  360 TRAP 400
RK  370 IF P=1 THEN CLOSE #2:OPEN #2,8,0,"
    P:"
ZB  380 IF P=1 THEN ? #2,"         LOTTO NUM
    BERS":? #2:? #2
QQ  390 GOTO 30
MM  400 ? :? :? "PRINTER NOT RESPONDING!":
    ? :? :GOTO 330
```

# Antic Classifieds

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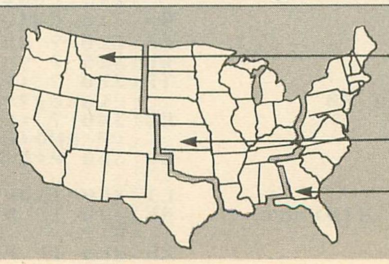
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On Sale: Last week of November

### February 1989

Insertion Orders: November 2
Artwork: November 9
On Sale: Last week of December

### March 1989

Insertion Orders: December 1
Artwork: December 8
On Sale: Last week of January

# Tech Tips

## USEFUL POKE & PEEK LOCATIONS

| | |
|---|---|
| 752 | Cursor inhibit: 0=visible, 1=invisible |
| 756 | Character base register: In graphics 1 and 2, POKE 756, 226 to get lowercase characters. (Default is 224) |
| 764 | Contains value of last key pressed (internal code) |
| 767 | Scroll start/stop flag: Toggled by pressing [CONTROL] [1]; 0=Scroll enabled, otherwise disabled |
| 832-847 | IOCB0: default device for the screen editor. POKE 838,166 and POKE 839,238 to send all screen outputs to the printer. POKE 838,163 and POKE 839,246 to return to normal |
| 928-943 | IOCB6: used for screen display |
| 944-959 | IOCB7: used by LPRINT, LOAD, SAVE and LIST |
| 2147,2148 | One of two locations used by DOS to store LOMEM |
| 2152,2153 | The other DOS pointer to LOMEM |
| 5533 | Used by DOS to check for presence of DUP.SYS: Zero means DUP.SYS is not there |
| 40960 | USR here to *cold start* the BASIC cartridge |
| 41037 | USR here to *warm start* the BASIC cartridge |
| 53277 | POKE a 4 here to put paddle and joystick triggers in latch mode; in latch mode, once a trigger is pressed, it stays "pressed" until this location is POKEd with 0 |
| 53760 | AUDF1: controls the frequency of audio channel one |
| 53761 | AUDC1: controls volume and distortion of audio channel one |
| 53762 | AUDF2: channel two frequency control |
| 53763 | AUDC2: channel two volume and distortion control |
| 53764 | AUDF3: channel three frequency control |
| 53765 | AUDC3: channel three volume and distortion control |
| 53766 | AUDF4: channel four frequency control |
| 53767 | AUDC4: channel four volume and distortion control |
| 53768 | AUDCTL: master audio channel control byte |
| 54018 | PACTL: POKE 52 here to turn the cassette motor on; POKE 60 here to turn the motor back off |
| 58454 | CIOV: (more commonly known as $E456) is the entry vector to the central I/O utility in the OS |
| 58460 | SETVBV: vertical blank interrupt setup-vector |

**(This concludes the two-part Carl Evans series which began last month.)**

## HAGUE'S PAUSE KEY

Install a "pause key" in your BASIC programs, using this short listing by James Hague, author of *Uncle Henry's Nuclear Waste Dump* (**Antic**, December 1986). After the routine has been installed, holding down [SELECT] and pressing [BREAK] will pause whatever is currently running, be it a BASIC program or machine language subroutine. Press [START] to continue. Also, the [BREAK] key still functions normally alone.

Pause Key must be re-installed after pressing [RESET]. The only things this program can't pause are vertical blank routines and disk I/O.

```
10 FOR A=0 TO 16:READ B:POKE 256+A,B:NEXT A
20 IF PEEK(566)<>0 OR PEEK(567)<>1 THEN POKE 273,PEEK(566):POKE 274,PEEK(567)
30 POKE 566,0:POKE 567,1
40 DATA 173,31,208,201,5,208,9,173,31,208,201,6,208,249,104,64,76
50 ?"ANTIC";:GOTO 50:REM For a quick demo, add this line.
```

## ROTATION

Max Metral, 15, lives in Frederick, Maryland and sends along this routine that draws a rectangle, offsets the next rectangle by a specified increment and repeats the process. What you end up with is a flashy screen display.

```
5 GRAPHICS 8:SETCOLOR 2,0,0:COLOR 1
10 ? "STEP";:INPUT DL
20 FOR I=1 TO 300 STEP DL
40 PLOT I,0:DRAWTO 0,150-INT(I/2):DRAWTO 300-I,150:DRAWTO 300,INT(I/2):DRAWTO I,0
50 NEXT I
55 END
```

*Antic pays $25 for every original and exclusive Tech Tip submission that we publish. Send your 8-bit or ST disk and printout to: Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. Tech Tips welcomes very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.*




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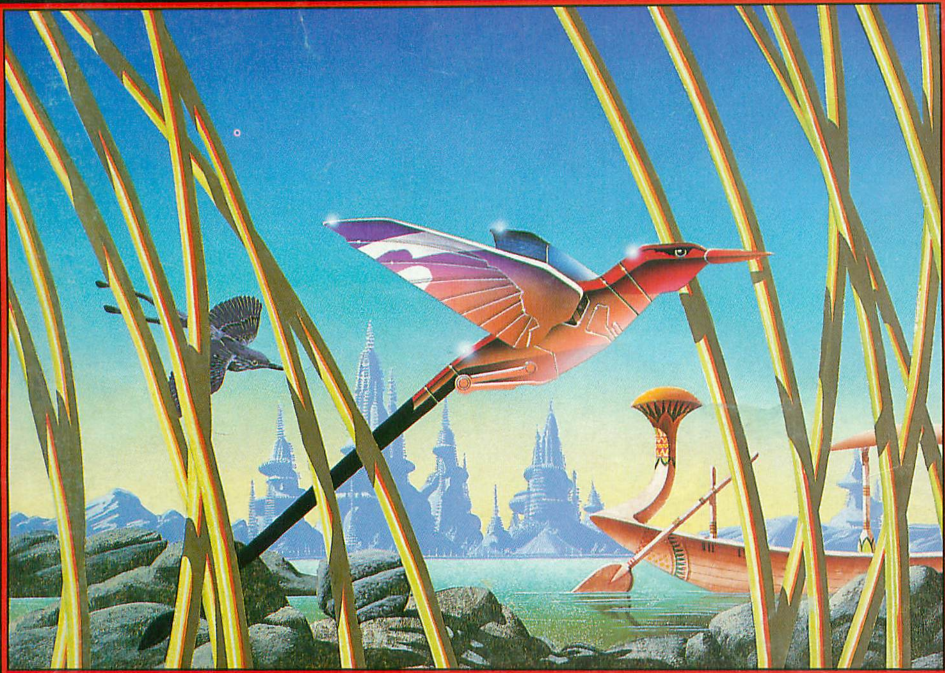
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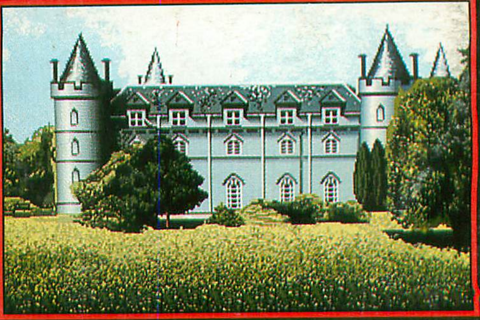
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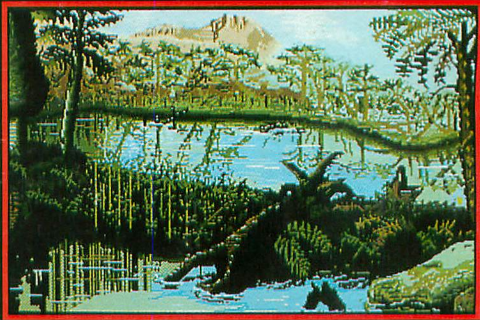
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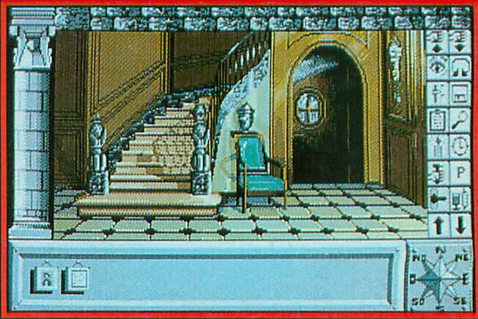
# CHRONO QUEST











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You will be presented with many objectives; ultimately you will have to travel through time to collect the fragments of magnetic card to drive the Time Machine into the future. There you will have to . . . Meanwhile, the immediate objective is to find the time machine . . . Sorry, a more immediate objective is to find the room with the time machine in it . . . But its dark . . . Very sorry, an even more immediate objective is to be able to see where you are going . . . 3 hours and 250 minutes and even more immediate objectives later, you are standing in the hallway thinking . . . hellpppp!!!!!!

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